

YOUR COMMODORE

12 Days Of Christmas – Gift Ideas

Inside
Commodore
Basic

Games Reviewed:
Final Assault
Captain Blood
Ingrid's Back
Corruption

FEST OF 1988

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Data Statements

Good IDEAS

The Cleveland Information
Technology Council has
launched a free, on-line information
retrieval system called IDEAS (for short, the full title
is the ITIC Data base, Electronic
Access Service).

Designed by the Cleveland
ITIC supervisor, Graham
Robinson, IDEAS allows users
to search their one billion
records and retrieve informa-
tion exchange occurs through
which information can be
searched or sought on a variety
of subjects. The system has
been designed to appeal to
special interest groups, such as
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but certain areas will
offer open access to the general
public.

Closed user groups will be
required to pay an initial fee for
registration charges but future
access will be free. The contents
of the database are determined
and compiled by the users and
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can be used as long as
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baud, seven bits, even parity
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TELELINE Graham Robinson,
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Bookshelf

With book shops stocking a
range of computer books,
Computer Manuals are ready
to supply users' needs by supplying
a reasonable range of C64
and C128 books from their
library catalogues. Included in the
range are the Commodore 64
Programmer's Reference Guide, Weber System's C128
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Antony Books from Ford
Publishing for the 1541 and
1571 disk drives.

TELELINE Computer Manu-
als, 18 Lincoln Rd, Green-
Borough, B7 4PA. Tel
01-788 6659

CIB Attack

At a press launch held
at the National Army Museum,
CIB announced the release of
their latest computer board-
game, *Rank Attack*.

The game involves the
rivalry between four fictitious
countries who decide that the
only solution to their differ-
ences lies in armed conflict. With
the computer acting as controller
and graphic aid, the main
action takes place on a playing
board, using small plastic tanks
and armoured cars. Each player
can move pieces around the
board according to the computer's
movement allowance. But this
can be fought by advancing
the component of the weapons
involved, range and survivability
of the combatants. Acting on
this, the computer displays the
tanks on the screen and details
its actions. At the end of each

day's fighting, the computer
also displays a summary in the
form of a newspaper page.

CIB looked off the computer
board game two years ago
with *Bomber Clash*. *Rank Attack* is
the latest addition to the company's
range of games.

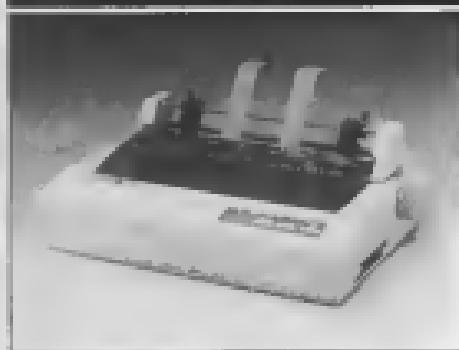
CIB Attack will retail at
£19.95.

TELELINE CIB, 444 Redhill
Road, Dorking, Surrey RH4 1PF
(081) 271134



An exciting Total War game of
army tank battles!

New Office



The latest Citizen printer for home, small business or education use has been designed and constructed in Britain. With facilities for all of the European and Scandinavian alphabet options, Citizen are claiming that the CX800 is a truly European printer.

Supporting the alphabets, the machine also offers two resident typefaces in either draft or NLQ modes as well as the usual variants of italic, boldface, condensed and enlarged styles. The quadruple line printing capability has been enhanced so that double and quadruplicate and wideprint can be combined in various ways.

so good for styling for picture printing.

The printer employs a pull tractor feed which can be reversed to allow single sheets to be used individually in the tractor slot, or to be fed in bulk from a hopper which is offered as an optional extra. Standard paper types, such as address labels, can be fed via the special bottom feeder position.

The CX800 1000 retails for £129 plus VAT.

Supplier: Citizen Europe, Hollington House, 4-10 Cross Road, Uxbridge, Middlesex UB8 2JN Tel. (0895) 37221

Integrated Combat

The final stages in producing F-16 Combat Pilot were helped immensely when Digital Integrations' team had detailed discussions with the chief test pilot for General Dynamics, the manufacturer of the F-16.

Such attention to detail has been one of the parameters for the game's designer, but the latest development adds to the invaluable help of Bill Gossman, a respected author on aviation, and puts the seal of quality on the game, in the opinion of David Marshall, Director of

"Without gratitude for the assistance we have received

from both General Dynamics and the F-16 pilots. Our game is going to be the closest you can get to flying this aircraft yourself without leaving your room."

F-16 Combat Pilot will soon be available for the C64 on cassette at £34.95 and the disk version will cost £39.95. The Amiga version will follow within the next few months.

Supplier: Digital Integration, Windmill Moor Trade Centre, Windmill Moor Road, Caversham, Reading RG4 0JZ Tel. (0344) 68947

Manager Plus

Part of Football Manager, can now add further enjoyment to the game with Additive Games' special Expansion Kit. With the aid of this kit, saved games can be modified by changing the team names, colour, players' names, sponsor and the name of the Cup. With a brand new game, additional changes may be made to the starting division of your association, the amount of cash on hand and the points awarded for league wins and draws.

The new program also has saved games for the Scottish, French, Italian and World Leagues and will be released in February. The Football Manager 2 Expansion Kit will be available on cassette and disk, for £9.99 and £9.99 respectively.

Supplier: From Leisure Corporation, One J. Bird Road, Oxford, Oxfordshire OX1 3JZ Tel. 081-804 2170

Superior McGiligan

Superior Software's latest game, *B-Far Above or Far Below*, is a flight simulator designed for those who can succeed in becoming World Champions. Superior qualifies the player for a chance to win a flying trophy, £200 or a certificate signed by Barry McGiligan.

Barry told us just recently to examine Superior's game which allows a variety of tactics when the player is not looking. Hopefully, this will influence jet-set flighting style. *B-Far Above or Far Below* is available on cassette for £9.95 and the disk version costs £11.95.

Supplier: Superior Software, Roger Moore, Shireen Lane, Luton LU7 1AE Tel. (0582) 439473

Clean Machines

Logistics and TV or computer screen rooms to attract dirt but finding suitable cleaning solutions can be a problem. Addictive Supply Company cleaning pads, which will take care of computers, screens and the dust-dust boards, too. The 16 inch in two variations are for 3.5 inch and another for 5.25 inch.

The large ones £11.95 and the screen wipers are supplied in packs which can be attached to the side of the monitor for easy access.

Supplier: Addictive Supply House, London Road, Staines Heath, Surrey TW15 7RZ Tel. (071) 8818000

Medigene's Move

Activision (UK), the British arm of Mediagene, have moved from their Hampshire address to Basingstoke this year. Activision's programmers, Software Studios, will be moving in to the new premises from Basingstoke.

The new address is Activision (UK) Ltd, Stake House, Manor Farm Road, Basingstoke RG2 0JN Tel. (031) 311666

Repair Initiative

The South Business Initiative has given a chance for a young company, VSE Technical Services, to set up a one-computer repair company. Although Ian Younger and Tim Morris have been repairing computers for some time, their new workshop in the Mercury Asset Management South Enterprise Centre provides extra facilities. Explaining these benefits, Ian said, "It provides us with a base with competitive back up services such as recruitment, reception, business information and advice. This gives us a chance to concentrate on making a success of our business."

Tiny Runs Out

The financial problems of the Sport Aid charity has claimed a victim in Code Masters software house. The official computer game which was meant to help the charity has proved as popular as Ben Johnson at a temperance meeting. Not that the game is necessarily bad, indeed many of the reviews have been good, but the higher price of £4.99 which the charity donation represented has crippled the sales according to Code Masters' operations manager, David Evans.

The game has been designed by volunteers because prior to the crash of Sport Aid, the cover which depicted Jason Gann had to be changed to show Carl Lewis or action fighter Yannick. Eviction of the game has failed to make much of an impact on the Galaxy charts and Code Masters' losses are now passed on the success of the C64 version.

Commodore Code Masters Software, Lower Swan House, Stonehouse, Gloucester, Glos. GL1 5DL Tel. (0225) 834322

Dope Dicks

Following the launch of Commodore branded disks by RPS, partners have agreed to produce loadable disk formats containing inferior products. RPS are understandably annoyed about the sharp price which is potentially harmful to the reputation of the company and its high quality disks.

Commenting on the situation, Ian Martin, UK business manager for RPS, said, "Our initial tests show that these pirate disks are totally inferior in quality and performance and

any users of no-name or unknown brands are going to experience problems. We will ensure the good name of RPS and Commodore will be protected from that kind of contact."

Purchasers of Commodore branded disks should check to see that the box contains the warning "Manufactured by RPS".

RPS, High Street, Wraggless Ridge, Bath, BA1 5QE Tel. (0225) 867552

Real Disk?

SMS-Dangerous Masters Associates is intended to teach players of Advanced Dangerous and Dangerous.

Using this utility, Dangerous Masters are relieved of the duty of creating and maintaining accounts with a wide range of members and visitors.

The database contains over 1000 accounts and over 1000 characters and supports member records and administrator records. The DBM can also specify recognition or not, the Aviation to generate random names. Existing data can be added or modified to suit the user's needs.

The program has been designed to handle most of the member searching and will also allow sensor and weapons types, number and types of spells, and trauma and experience points gained in each encounter.

Dangerous Masters Associates

now available for the C64 but the price has yet to be announced.

Commodore ESI, 43 Gold Hill, Maltby, Sheffield S6 7AL Tel. 0247 561165

Telecommunications tip

By the time you read this, packaging alone, with comprehensive guides and other items, is very attractive, and those who download telesoftware tend to lose out in this respect.

The reasons for the changes are numerous. Firstly, the major change will be the lack of commercially priced telesoftware. Previously Marconi used to supply software from professional providers such as Farsoft, though always on a rental basis. It would appear that the decision to abandon paid telesoftware was made partly because of lack of support from these software providers. To an extent, the attitude of the relevant bodies is understandable.

Even with the data protection that the Marconi download provider for Commodore software, it's still relatively easy to duplicate a piece of telecommunications software on your disk. Further, software is more and more complex, the

packaging alone, with comprehensive guides and other items, is very attractive, and those who download telesoftware tend to lose out in this respect.

The second major reason for abandoning paid telesoftware is that code for macros such as the Amiga tends to be on the large side, and so any cost saved by purchasing the program as telecommunications software in the first place and money's it takes to download the data.

In as much as a telecommunications gateway, Marconi won't be charging anything for the software that will be provided, but a free charge of £1 per minute will be levied when using the telecommunications gateway. This same charge will not be applicable between packages and Marconi.

Marconi say the charge is necessary to cover costs you do not incur with a single person.

Finally, with the change of chargeable telesoftware, Tele-

map resources (mapware, time, billing etc) has been allocated from telesoftware, the rest now sees the company money.

Secondly, drivers of telesoftware used to be stored on the Farsoft computer, and hence had to be copied by Telemap from Farsoft. In changing over to a gateway system, Telemap must be moving a considerable amount of memory.

Thirdly, Telecommunications is a fundamental part of Marconi. It always has been, ever since the service was first opened over five years ago and it has long been recognised that free telesoftware given from ALL charges excluding phone costs was something that the corporation owned.

Finally Telemap will offer a service to telephone users, basic email and the recent telephone increase could provide the telecommunications gateway as part of its standard service.

As reported in last month's column, Telecom Gold has now provided a fax facility for its subscribers. It's an outgoing text-only service at present, but should still prove useful for those who do not wish to invest in a dedicated machine.

Fax messages are charged by the telesoftware (per part thereof). One kiloblock = 1024 characters (approximately 1/3 of an A4 page).

The charge varies according to destination -

UK destinations	45p
European destinations	85p
North American destinations	11.20
Rest of the World destinations	11.50

More information, including an on-line user guide, can be found on Telecom Gold by entering INFO-FAX, INFO-FAX-USERS or INFO-FAX-COUNTRIES at the address

Games Update

The industry is beginning to wake like some slumbering giant, just in time for the expected Christmassy blast of the major releases were looked at last month in the Games Supplement, or feature in this month's issue. As a result there are only a couple of titles in this section.

The game likely to attract most attention is *Hyphens* from Imagesound on the Commodore 64/128, a frenetic multi-level shoot-em-up space. You start off piloting an F/A fighter-bomber putting yourself against hordes and hordes of oncoming mechanical aliens. The first mission looks most impressive as the plane is presented in a kind-of perspective, but the gameplay sounds all too familiar. As well as blasting the enemy craft, you can shoot down their anti-air missiles and pick up bigger and better weapons.

At the end of the level, you have to bomb an overall career intermission before being allowed to

progress. Then you'll change into a futuristic jet fighter for a deceptively familiar top-down, vertically scrolling, health-the-guns-not-victims-and-shoot-the-enemy-second affair. There are six more levels of this sort of thing, each one having to be cleared separately so that individual missions might find that it all becomes a bit tedious when it is finally game-over time.

Bumper from Addissoft is a cross-over blend of pinball and breakaction. A two-player game, you play against the computer or a friend, who has to manage your man around the bottom of your half of the screen, attempting to catch a ball on the end of your gun. Catch it anywhere else and you're dead; if caught, the ball can be used as a series of bricks above your gun or into several mirrored bumpers.

Each level is played against the clock, and a high mark if you happen to have a good opponent because you

are not going to see enough of the ball to score sufficient points to progress onto the bonus screen and next level. It must confess to being one of the world's greatest pastimes and the game has only no ten minutes for me to end up playing it for hours on end. To say that I thought *Bumper* was rubbish should give you some idea of my true feelings.

Another trailer comes from the French company Erix International. *Bubble Quest* is a variant on the old arcade adventure theme. You play a ghost trying to grab a bubble, representing its soul, through a maze of rooms, in an old castle. The less you do by hitting your soul, causing your ghost to give you the right that you require.

Contact with any of the pitchers of objects from around rooms, not surprisingly, has the bubble burst. As you progress further, there are puzzles to solve cards to be blown out, switches to be pulled and that sort of



Hyphens



Bumper

that

The game is very good and there are several nice graphic touches, but that does not compensate for a basic lack of interesting gameplay. This was the sort of thing that was around three years ago and the industry has come a long way since then.

Quite a few games that I have enjoyed from the good through the bad to the unfortunately awful. To conclude Dr Johnson these games are both good and original. Unfortunately the good ones aren't original and the original ones aren't good!

Without this is undoubtedly *The Race Against Time* from Code Masters. Originally written to help with Sport Aid, now has been broken out the company organising Sport Aid has gone bust, leaving several million pounds due to the postal strike. At the time of writing, there is some doubt as to whether the causes donated to charity might all go in paying off creditors so if you want to make a difference to charity I would suggest that you do so through Oxfam or one of the other agencies.

As for the game itself, you play the flying ace Otto Kralik in an arcade adventure that takes you round the world. You need to persuade people to join in the race by raising a flag and lighting a flares at each of the five continents. There are associated penalties on route and over 100 screens to race.

As of now on the ZX Spectrum you've behind the controls of a B-52B bomber at the Second World War. As well as flying the plane you must incinerate attacking V1 rockets, U-boats and enemy tanks. You get fully detailed air your mission and must then decide what weapons you are going to load onto your aircraft, choosing from a combination of bombs, rockets and missiles.

In flight, you have to flip between pilot, navigator and engineer screens in order to reach the target. The bombardier screen is only necessary once you have the enemy in sight. All that remains is to do after destroying your target in the escorting campaign is to fly home and get on with the next mission.

Sports fans could do a lot worse than take a look at *Track Frame*, also on the ZX Spectrum. It's a non-ji-



The Race Against Time

bowing simulation in which up to eight players can compete in a league. There are three different skill levels and the colour of the ball has double blind-type controls for judging direction, speed and degree of bow. The controls operate by releasing the fire button as a sliding scale reaches the desired point. Anyone who has failed miserably, to come to terms with the scoring in bowling will be pleased to know that everything is accounted for you.

Another sports program is *Projet-*

teur 86: Simulation from Code Masters. This is a reasonable game until you get right behind an obstacle and a chain becomes impossible to see the direction in which you're facing with the result that it's almost certainly game-over time.

My memories of checkboards are of three things. I recall sitting way back in the 70s. Recently though there have been a spate of checkboard games from Code Masters again comes *Projeteur 86: Simulation*. I wonder how much art goes in for the sake of ap-



Professional Air Transporter

Col. Masters take their posts
about round about the flag. 1st Lieut.
Wade, 2nd Lieut. A. C.

Other signs on the hill when I left in Roger's direction were those on road # 100 - based on the check given me previously. From the local gang leader I ascertained enough to make me feel that I had found what I was looking for.

Another blast from the past. You remember the Space Hoppers? An orange ball with a handle, you could pull it along like a sled. I had one of those. I never got around to it and started playing football instead. Paul Silverbird has come up with another one. It's a 3D version, a top of the range Space Hopper. Up and down the stairs it goes, your back-to-back, topsy-turvy, bottom-upright spinning sides. The only downside is that the ball is very heavy. In a relation ship, it's like the engine of the vehicle. Despite the straightforward nature of the game, it's a wonder to watch.

How to Start Long from "Tops" through the details of how to start moving up different slopes — moving up or dodging. (This Particular part is not included before.)

Polymer Poles on Polyvinyl Chloride Digital Integration and Quantification Using the Least Squares Method. A New Principle of Curve Fitting Using a Computer Program. J. R. H. M. VAN DER HORST, J. G. VAN DER VELD, AND J. C. VAN DER KAM, Department of Chemical Technology, University of Groningen, Groningen, The Netherlands.

John Wexner says "Mercury" is trying to do a new kind of energy with imagination, and following the trend of his system at the show he has come up with some scenes. Dreyfuss has not particularly shown.

The Current Trend in Design



四百三十一

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If you'd like to create professional layouts, but don't want to play with complex and often PaperClip Publisher has it all. This powerful page layout program for the Commodore 64 lets you combine text from your favorite word processor and graphics from your favorite drawing program to create almost any layout you can think up.

To place an article and your layout, simply choose a font and size in the menu. Or choose several lines and add them together in the menu. You can even choose one of them as a style in a menu. Then, if you're a graphics fan, you can draw a logo and integrate it into your layout. PaperClip Publisher's built-in graphics are about a dozen ways to get it right. Includes graphics PaperClip, a 16x16 dot matrix font, 16x16 dot matrix PaperClip, a 16x16 dot matrix font, a 16x16 dot matrix PaperClip, a 16x16 dot matrix font, and the Paper Clip Graphics Library. Once you've selected a layout, simply push the rightmost key, and voilà! a printed, elegantly produced page layout, that's unique or suitable to fit your specific needs.

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Byting Into the 6510

To tie up our struts on programming in machine language we look at some useful arithmetical techniques, and 6510 bit instructions and also find out about NOP and BRK

By Berghard-Henry Lehmann

In the final article of the series, I'd like to tie the subject up by dealing with a few techniques and some instruction which I haven't dealt with in the previous article.

Most of these techniques concern 16-bit arithmetic, an area in which the 6510 is notoriously weak.

Adding and Subtracting 16-Bit Numbers

Listing 1 shows you how two 16-bit numbers can be added together.

This works by first clearing the carry flag and then adding the low bytes and the high bytes of the two numbers respectively.

If one of the two numbers is 0, then you can use the method shown in Listing 2 or you can give the low byte as zero and add it to the low byte of the second number, using the method shown in Listing 1.

Subtracting two 16-bit numbers is done in a similar way, as you can see from Listings 3 and 4. Only now the carry flag has to be set with SEC, as used.

If you use the method demonstrated in Listing 3 and if the result of the subtraction would be negative, that is, if the first number is smaller than the second number, then will be shown by the carry flag being clear at the end of the routine.

Shift and Rotate Instructions

Before I deal with multiplication and division I'd like to deal briefly with a range of 6510 instructions which I haven't treated at all in the series of articles on so-called bit instructions.

These instructions allow you to manipulate the binary bits separately. At such these instructions are extremely useful for high-resolution graphics when you want to manipulate each pixel on the screen separately.

But you can also use some of the bit instructions for some arithmetical purposes, as we will see in a minute.

The most frequently used bit instructions are ASL, LSR, ROL and ROR, which are also called the shift and rotate instructions.



ASL shifts the bits within a byte which is either in the accumulator or in memory to the left, as shown in Figure 1. In arithmetical terms this has the effect that the byte is doubled each time ASL is used.

LSR does the opposite, by shifting the bits to the right, as shown in Figure 2. In arithmetical terms this has the effect that the byte is halved each time LSR is used.

One way to use ASL or LSR is probably to be a routine which shifts pixels to the left or to the right respectively. In this way you can get extremely sophisticated looking results.

There are two instructions which rotate the bits right round the byte. That is, the bit which is rotated out on the one side of the byte is rotated back in on the other side. It is as if the byte is a window on an endless conveyor belt.

ROL does the rotation to the left, as shown in Figure 3. In arithmetical terms it has doubles the contents of a byte, but has the advantage, that no overflow occurs in the carry bit. This makes this instruction, and the following one, especially useful for multiplication and division, as we will see later on.

ROR rotates the bits to the right and therefore does the opposite of ROL. In arithmetical terms this has the effect that a byte is halved.

The Logical Instructions

The 6502 instruction set includes three logical instructions: AND, ORA and EOR.

These instructions are useful on graphic routines when you want to manipulate single pixels on the screen. Initially you bring the bit you want to manipulate, into the right position by using a shift or a rotate instruction and then you AND, OR or EOR the byte, according to the result you want to achieve.

With AND the result is 1 if both bits are 1; if either or both bits are 0, the result is 0. That is:

```
0 AND 0 = 0
0 AND 1 = 0
1 AND 0 = 0
1 AND 1 = 1
```

For example:

AND	00010010	00100011
given	10010010	

With ORA (logical OR) the result is 1 if either bit is 1. That is:

```
0 ORA 0 = 0
0 ORA 1 = 1
1 ORA 0 = 1
1 ORA 1 = 1
```

For example:

ORA	10010010	11100011
given	00010010	

EOR (exclusive OR) works like ORA, except for one: 1 EOR 1 gives 0, and not 1. That

```
0 EOR 0 = 0
0 EOR 1 = 1
1 EOR 0 = 1
1 EOR 1 = 0
```

For example:

EOR	10100110	11100101
given	00000011	

EOR gives several interesting results. If you EOR a number with 0 you get the same number as result. For example:

EOR	10000000	10100011
given	10100011	

If you EOR a number with the same number you get 0 as result. For example:

EOR	10100110	10110011
given	00000000	

EOR has an extremely useful property which allows us to make a number disappear by masking it with another number, and then making the same number re-appear by masking the result again with the same mask. For example:

Int number	10100100	
Mask number or mask	EOR 01000000	

given	11000000	
-------	----------	--

Int number or mask	EOR 01000000	
--------------------	--------------	--

given again	10100101	
-------------	----------	--

That is, if two bits correspond the zero flag is set if they don't the zero flag is clear.

As I've mentioned before, all the above instructions are most useful if you want to do high resolution graphics or re-design the character set or design a monogram routine which gives you more characters in a column than the usual 40 characters and so on.

Multiplication and Division

Not there are also some used with multiplication and division.

This is useful to know because the 6502 has no multiplication or division instructions. Thus, if you want to do multiplication or division you have to write your own routines.

If you simply want to double a byte, you can do so easily by shifting it rotating it to the left with ASL or ROR respectively.

If you want to half a byte you can do that by shifting or rotating it to the right with LSR or ROR respectively.

Listing 3 gives you a routine which lets you multiply to single bytes and gives you a 16-Bit result. Put the first number into zero page 252. You'll get the result of the multiplication in the same two locations.

This routine uses a branch instruction and a loop which branches if the negative flag is clear.

The negative flag of the flag register tells us the result of a subtraction or comparison is negative or not. It is set if the result is negative, that is, between 128 and 255. And it is clear if the result is positive, that is, between 0 and 127. (In the second article of this series I have briefly explained that an 8-Bit number is a number between 0 and 127 is considered positive, while a number between 128 and 255 is considered negative.)

BPL is the opposite branch instruction to BPL. It branches when the negative flag is set.

Listing 4 gives you a routine which divides a 16-bit number by a 8-bit number. You put the 16-Bit number into zero page locations 251 and 252 and the 8-bit number into 251. The result which is assumed to be 8-bit will be at 251 with the rest at 252.

If you want to multiply or divide two 16-bit numbers and get a 16-Bit result you'll have to do a fairly hard way and construct a loop which adds or subtracts by how many times you want to multiply or divide.

PROGRAMMING

Comparisons

Comparing 8-bit numbers is no problem. If you want to compare two 16-bit numbers the task is to subtract the two numbers from each other. Listing 7 shows you how to do that.

The result of the comparison is given with the states of the zero and the carry flag. If the zero flag is set, both numbers are equal. If the carry flag is clear, the first number is less than the second. If the carry flag is set, the first number is larger than the second.

Thus BCC, BCC and BCS test for =, < and > respectively.

Last Instructions

Finally I'd like to deal with two instructions which I haven't mentioned so far, NOP and BRA.

NOP does absolutely nothing, except waste time.

This sounds pretty useless, but there are occasions where you want to use NOP. Rather you want to waste time on purpose, in order to hold a program on the memory for long enough for the user to read it. NOP has the advantage that you can time your waiting of time very precisely. It may therefore also be useful in timing routines in general, etc.

Sometimes NOP can also be useful if you want to temporarily take over some instructions without changing the location of the subsequent instructions. This is useful for debugging purposes.

BRA is also used mainly as a debugging device. Whenever it is used, the 6500 jumps to the next routine of the computer. This is similar as if you press RUN/STOP and RESTORE simultaneously.

By changing the vector at \$A010 and thus making a jump to your own break routine, you can make the computer jump to wherever you want to whenever BRA is used.

This fact is used by most machine code monitors - whenever BRA is given, the program flow jumps back to the monitor.

As I've said, BRA is useful for debugging purposes. It allows you to interrupt a routine at which ever point you want to be in order to see what it has been doing so far. For this BRA is more useful than RTS, because if you want to break in the middle of a subroutine, a temporary RTS will only return you to the main program, while BRA will get you right out. To

Listing 1 - Adding Two 16-Bit Numbers

```
CLC  
LDA low byte 1  
ADC low byte 2  
STA low byte 2  
LDA high byte 1  
ADC high byte 2  
STA high byte 2
```

Listing 2 - Adding an 8-Bit and a 16-Bit Number

```
CLC  
LDA low byte 1  
ADC low byte 2  
STA low byte 2  
BCC no high byte  
INC high byte of second number
```

Listing 3 - Subtracting Two 16-Bit Numbers

```
SEC  
LDA low byte 1  
SBC low byte 2  
STA low byte 2  
LDA high byte 1  
SBC high byte 2  
STA high byte 2
```

Listing 4 - Subtracting an 8-Bit Number from a 16-Bit Number

```
SEC  
LDA low byte 1  
SBC low byte 2  
STA low byte 2  
BCC no high byte  
INC high byte of second number
```

Listing 5 - Multiplying two 8-Bit Numbers with a 16-Bit Number as result

```
CLC  
LDA 0  
LESS 0  
LOOP ROR  
ROR 251  
BCC SKIP  
CLC  
ADC 152  
SKIP DEX  
BPL LOOP  
STA 252  
RTS
```

Listing 6 - Division of an 8-Bit Number with a 16-Bit Number

```
CLC  
LDX 0  
LDA 252  
ROL 251  
ROL  
BCC SKIP1  
CMP 253  
BCC SKIP2  
SKIP1 SBC 253  
SEC  
SKIP2 DEX  
BNE LOOP  
ROL 251  
STA 252  
RTS
```

Listing 7 - Comparing two 16-Bit Numbers

```
SEC  
LDA low byte 1  
SBC low byte 2  
STA temporary  
LDA high byte 1  
SBC high byte 2  
ORA temporary
```

Less of subtraction explained in this article:

ASL = shift content of accumulator or memory to the left

LSR = shift content of accumulator or memory to the right

ROL = rotate content of accumulator or memory to the left

RRR = rotate content of accumulator or memory to the right

AND = logical AND

ORA = logical OR

EDR = logical exclusive OR

BIT = test memory bits

NPL = branch if negative flag is clear

BMI = branch if negative flag is set

NOP = no operation

BRA = basic break

Captain Blood

It's a swashbuckling adventure game that's sure to make you want to become a real-life pirate... or at least a computer game pirate.

Being a swashbuckler is a dangerous business. Whether you're a real-life pirate or a computer game pirate, you're bound to run into some trouble. But Captain Blood, the latest game from Sierra On-Line, offers a welcome respite from the usual fare of space invaders and other mindless games. It's a swashbuckling adventure game that's sure to make you want to become a real-life pirate... or at least a computer game pirate.

Sierra On-Line has established itself as a leader in the field of adventure games. Their games are well-made, well-designed, and well-written. Captain Blood is no exception. It's a well-made, well-designed, and well-written adventure game that's sure to keep you entertained for hours on end.

What's it about?
Title: Captain Blood (version 1.0)
Developer: Sierra On-Line
Publisher: Sierra On-Line
Platform: Macintosh (68020/12M), PC (386/12M), Amiga (3000/12M)



Basic Explored

Understanding how Basic works can bring memory saving benefits

By Paul Eves

Beginners All-purpose Symbolic Instruction Code or BASIC (or there), was originally introduced so that ordinary people could have access to a simple-to-learn and easy-to-use programming language. To this end the language has been 100% successful. However, it does have certain limitations, particularly the version implemented on the C64. The idea of this article though, is not to run down the language, but to try to give a better understanding of its structure within the computer's

memory, with some hints and tips on how to get the most out of the limited amount of memory available for your programs.

Code In Memory

When you are typing in your program, you may wish to view a particular section of it at some time. To do this you give the instruction LIST, and immediately like a program begins running past your eyes from start to finish. Obviously, what you see on the screen and what's in the computer's

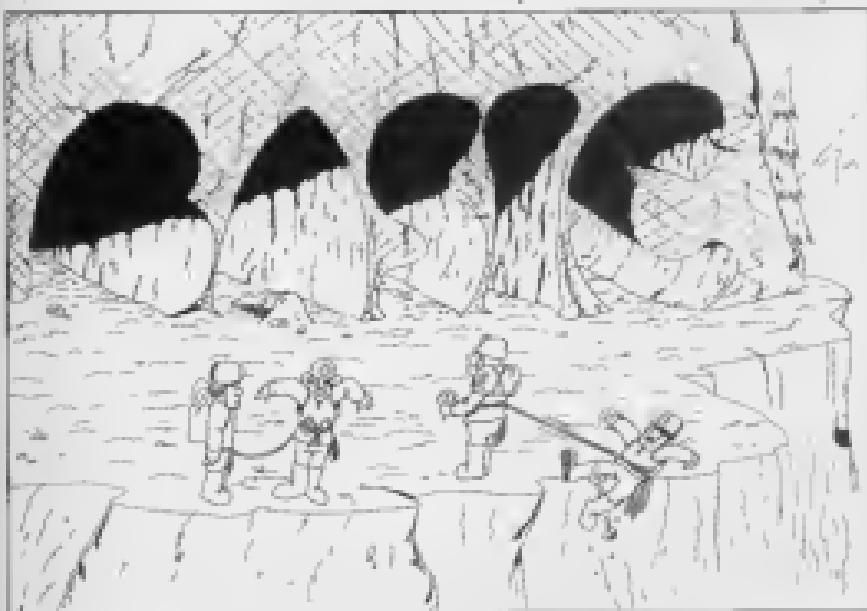


FIGURE 2

Remember, all the values you see here are in hexadecimal notation.

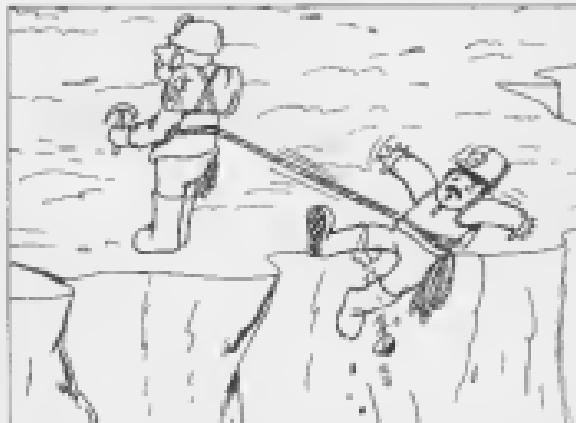
and download it from back on the

Our Communication Standard Errors

Finally there is a common table

of your results by comparing to observational

REASSESSMENT POSITION AS OF END OF PERIOD 40
REASSESSMENT IN PERIOD ONE (BAL. CPTD)



ENTRANCE

```
10 PRINT "WHAT IS YOUR NAME"
20 PRINT NAME
30 PRINT "HELLO ";NAME
40 FOR I=1 TO 3
50 NEXT I
60 PRINT "END OF PROGRAM"
70 END
```

memory are few different things altogether. Indeed, the last decade past your eyes have undergone many changes on their journey from memory to screen. So just how do we get to view the progress of memory? One power up the default setting for the start of basic memory is RAM (2048 decimal). So to sum it all up the first 56 bytes of memory, you would type something like the following -

The world is done in direct mode. What you would now see is a series of decimal numbers in the range 0-223. These numbers are the decimal equivalents to the hexadecimal numbers that are stored in memory. These ten numbers are the machine's interpretation to what you typed at the keyboard. To give you a better understanding of this, look at figure 1. This is a sample screen from Basic program. Now look at figure 2. This is how that same line program is stored in the computer's memory. I shall now explain how the program is made up line by line.

Each and every Basic line has an eventual of five bytes, plus the line itself! These five bytes consist of a line address, line number and a starting byte which denotes the end of the line. The first address is used by the system when you're using the screen editor, that is to say, when you are inserting or deleting lines of a Basic program. They are ignored when the program is running. That's about the last addresses I know. How hard to remember, eh?

So what does all this mean? The first question that may spring to mind is, how does the computer know how to pick out the command words? The answer is simple: Command words, or keywords as they are called, have values in the range FFH to 1FH. When you press the return key, the data is sent to the keyboard buffer for interpretation. A key-map table is then used and your line is scanned for the keywords. The more observant of you will now be asking yourselves: What if I type PSHW?PUSH? What would that be interpreted as two print statements? The answer is no – one of the jobs of the look-up table is to check on the quoted mode. If a keyword has between quotes, then it must be within a print statement. Back to our little example:

Memory address 30000 contains 300. For Bus to operate correctly, the memory address immediately before the start of Bus memory must also have a zero byte. The next two bytes contain 317 and 304. These bytes represent the link address in the usual low byte/high byte format, and tell the computer where the ROM Bios lies. From the next two bytes down 304 and 300 this is the byte number shown once again in the low/high byte format. The next byte is 501. Remembering what I said about keywords falling in the range of FF and C0, you'll realize that this is a keyword – in fact it's the first keyword for BASIC.

The following five bytes represent the number 53240. The following bytes is a SCSI, which is interpreted as a command. Look at the rest of the example, and see if you can follow it through line by line. At first it may seem strange to you, but with practice it should become easier. It would help you to have a table of the ASCII values printed.

End of the Line

You may be wondering how a computer knows when it reaches the end of a Basic program. Remember

that look address I mentioned? Well, if the last address contains a double zero byte, that marks the end of the program. As a matter of interest, if you want to know where the start and finish of a Basic program you can always peek into the following locations ZED/1E and ZEB/1C. These zero page locations are known as **VARTAB** and **TXTTAB** respectively. Going back to our example, if you look at Figure 2, you'll see that location \$0000 marks the end of our little demo program. If you count the number of bytes, you discover that this short demo has program take up 93 bytes.

As you can see Basic consumes memory very quickly. So what can we do to get the most of the available memory? As you may know, all the keywords can be abbreviated. In most cases this means typing the second letter only in shifted mode. Obviously, you need to type the first two letters, then the third as shifted. The one exception to this rule is the **PRINT** statement that can be abbreviated by the 3 key.

For example, "HELLO" is the

keywords is that although the screen editor on the 64 is perhaps the best there is, it does limit us to only 80 characters per program line (that is, two screen lines). Therefore, by using shifted keywords, we can squeeze more information into any program line. The easiest way of gaining more memory is by putting more than one instruction on a line. The best way of demonstrating this is by example. Figure 3 is our seven-line demo expanded incorporating the two above tips. Figure 4 is the new method of storing it in memory.

Remember that in reality, all the keywords are abbreviated, but for clarity are shown as normal.

Now if you count up the number of bytes, you'll see that it comes to 73. So already we have made a saving of 20 bytes, and that's only on a very short program. Imagine the savings you could make on a large basic program!

Variable Lengths

Another area where we can save on

FIGURE 3

```
10 PRINT "HELLO"
20 PRINT "HELLO"
30 PRINT "HELLO"
40 PRINT "HELLO"
50 PRINT "HELLO"
60 PRINT "HELLO"
70 PRINT "HELLO"
```

FIGURE 4

LINE	NUMBER	DATA	FORMAT	DATA	FORMAT
10	10	PRINT	DATA	"	DATA
20	20	PRINT	DATA	"	DATA
30	30	PRINT	DATA	"	DATA
40	40	PRINT	DATA	"	DATA
50	50	PRINT	DATA	"	DATA
60	60	PRINT	DATA	"	DATA
70	70	PRINT	DATA	"	DATA

is **PRINT "HELLO"**? Likewise followed by a shifted @ is the same as **POKE** (again the user guides give a full list of abbreviated keywords so who does this help us? Well the less number of bytes you have in your program, the less number of bytes you take up. Remember, each line has an overhead of five bytes plus the line itself).

The reasons for using shifted

memory is our variables. It's important to know what types there are, how they are made up, and most important of all, how they are stored in memory.

There are three types of variables allowed in Basic - string, integer and real. If you include function names, there are four. String variables have the dollar sign after the name, integer have the percent, and real have nothing. The default value is real. At

this point, I will assume that you know how to make up a variable, and the rules as what you can and cannot include in the name. Our main aim is to see how they are stored in memory.

All variables are stored immediately after the Basic program in memory and are also stored in the order of creation. Strings, however, have two pointers. One is the address of the string, and the other is the string length. Strings are also stored at the top of Basic memory, and work downwards. Variables are either simple or subscripted. Simple variables use an overhead of seven bytes, made up as follows:

The first two bytes hold the variable name. The third the next two holds the length of the string, the next two are pointers in low/high format. The remaining two are unused integers (one byte short and four for sign and value, with the remainder unused). Real vars have three as an expansion, with bytes four to seven as no sign and mantissa. A function also uses seven bytes, the third and fourth point to the definition, the fifth and sixth point to its variable, and bytes seven as initial value. Subscripted variables, unlike the simple ones, only require the unexpanded values for storage. For example, storing **1000** only requires three plus the length (integer only used two).

Earlier on I talked of ways of saving yourself as much memory as possible by using abbreviated keywords and putting as many instructions on one line as possible. Well, here's one or two hints on how to make your Basic programs a little quicker. The obvious one is that the line line numbers there are the quicker the program will be. Secondly, ensure that all important variables are declared early on in the program. This will save linking time. Third, try not to have thousands of **GOSUB**'s or **GOSUB#**'s - all that going and returning takes time. Finally, if you have lots of **DATA**, put it at the **start** of your program. This will save time searching **READ**.

I hope that this article has helped you to understand just how Basic is stored. Remember that the best way of learning is through practice so get yourself a machine code monitor, and start looking around. It will surprise you just how much knowledge you gain by poking and prodding around memory.

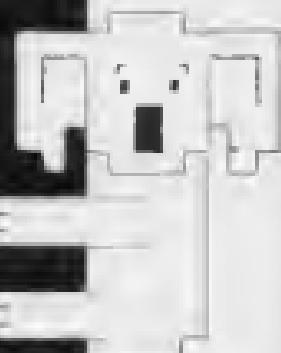
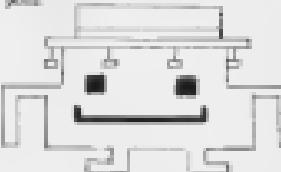
Prefab sprites

Sprites will be appearing all over the place with this utility
by Tim Collier-David

Most sprite editor options on Basic C64 are better than one's difficult because it will edit anywhere in memory. Even the RAM under the VIC and SID ROMs are open for edit, as well as the space underlying the Basic and Kernel ROMs. Normally, the only way to design sprites under VIC is to work in BASIC and then reinsert them by programming.

In addition, each sprite can be flipped, reversed and expand but there's

one area that the sprite can't be placed. The area up to \$2000 is occupied by the program code, change this at your peril!



Once the listing has been typed in, the program can be run by the Basic RUN command or SYS 204. This will allow the sprite-editing screen where the current sprite can be viewed or a memory area can be inserted by groups of 16 sprite blocks or run by one.

After typing in the listing save it onto a spool disk or tape. When the program runs it will automatically save out the actual sprite editor to have a master tape or disk ready in the drive.

Commands

+ Increment sprite	SHIFT 1	Decrement sprite colour	start address and press RETURN
- Decrement sprite	2	Decrement multicolour 1	Repeat the procedure for the end address. Use SPACE to toggle the save device.
SHIFT + Increment by 16 sprites	SHIFT 2	Decrement multicolour 2	Press RETURN again and enter the filename.
SHIFT - Decrement by 16 sprites	3	Decrement multicolour 3	Followed by RETURN to complete the save.
H Select multicolour mode	SHIFT 3	Decrement multicolour	Toggle key repeat speed.
H Select device mode	2	Decrement background colour	Run-run editor.
R Reverse sprite	4	Decrement background colour	Q Quit.
X X-flip (use <)	SHIFT 4	Decrement border colour	Enter or leave editing screen.
Y Y-flip (use <)	5	Decrement border colour	CRSR Moves cursor about within editing screen.
- X and Y do a bottom flip	SHIFT 5	Load — after which	*
which can mix up the	6	Press RETURN to enter	Plots a point in hi-res mode.
colours, this will regulate	SHIFT 6	the filename or SPACE to	1-9 Plots colours 1-9 in
the result.	7	toggle between tape and	realisation mode.
E Kill sprite (loads)	8	disk before pressing	SPACE Unplots a point.
SHIFT U Scroll sprite up	9	RETURN Run the	
SHIFT D Scroll sprite down		Save and press	
SHIFT L Scroll sprite left		RETURN again to start	
SHIFT R Scroll sprite right		the load	
F1 Memtest sprite		Save — after which	
F2 Copy memtest sprite to		User + col = to select the	
F3 Current sprite position			
I Increment sprite colour			

"THE MAIN EVENT"

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- TUTORIAL RELEASE** Some students in my classes work independently. I have found that many do not know how to use the software effectively. That is why I have created a series of tutorials that teach them how to use the software effectively. These tutorials include step-by-step instructions for each program.

- Panel Four: Summary** This panel provides a summary of the findings.

- glucose, high serum glucose and insulin resistance are associated with hypertension, and hypertension is associated with insulin resistance.

- *Wetlands* (1993)** Based on the 1990 census, it projects a steady decline in the number of older people and an increase among the other population groups.

- ④ *using the computer*.** When the series have been collected, used, and modify system to deal problems, they can be solved. Computer may process the inputs and produce the required outputs. This operation.

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- What is the best treatment?** There are many ways to treat a stroke. The best treatment depends on the type of stroke, how severe it is, and other factors.

- Digitized by srujanika@gmail.com

- INTERVIEW QUESTIONS:** Identify the two areas or different programs that make your business by talking your lead to the customer's problem, idea, then make a thinking. When a great program comes up, there are many questions you can ask.

- 10. *metabolic syndrome* (metabolic syndrome)** metabolic syndrome is a cluster of risk factors that increase your chance of developing heart disease, stroke, and diabetes. we need type 1 diabetes, triglycerides > 150 mg/dl, blood pressure > 130/85 mmhg, waist circumference > 40 inches in men and > 35 inches in women, and a low HDL cholesterol level of less than 40 mg/dl.

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A range of resources to support the use of these high-risk patients, including one provider-specific edition or replacement medication displays, sample patient

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I've stopped smoking and totally戒烟了。Now is really the time to make
money savings. What percentage do you
think you'll save?

ACTION REPLAY ENHANCEMENT BISH

The biggest win last weekend of special promotions was the most popular, the two-day "Buy One Get One Free" promotion. This was probably the best sales opportunity since UNDERWOOD'S BARGAIN & LAST. It's still time to go back to the store and get your free items.

Corruption



Corruption - the latest game from Magnetic Scrolls



Corruption - the latest game from Magnetic Scrolls

Any connection to desperate need of a laugh has only so much of the magic word 'yuppie' and the audience according to full about that who wants to laugh? Anyone who goes thousands of pounds into those things German car manufacturers. Parallel, as they say, comes managing as purchase that in clockwise deserve considerable sympathy. Nevertheless, there are considerable killings to be made on the way, in more ways than one.

Corruption is the latest adventure game from the pen of Magnetic Scrolls. After two excellent games, *The Price and Death of Thieves*, I did not enjoy their last effort *Amateur*, very much and it was interesting to see whether that was going to be a signal of whether the scrolls would continue.

The first thing that you notice is that the storyline is very different from anything that has gone before. The business and party jobs have all disappeared. Everything here is deadly serious.

On the face of things, your future prospects wouldn't be rosy. You have just been promoted to a full partnership in your company and can expect a corresponding increase in your lifestyle. The only thing wrong at the moment is a pretty office and a secretary who can sort mail with a single look.

Then everything starts to fall apart. You discover, or rather hasty suspicion that you were having a secret affair with your partner, although that is vehemently denied. The never-fail agent are called in and you are accused of insider dealing, trafficking in drugs and many other offences. Suddenly, you have been set up, framed, and you have no idea why.

Whoever has done it to you, though has done a pretty thorough job, and you must discover that reason of going to believe your excuses. You are going to have to prove your own innocence and that means that you will have to fight dirty. Very dirty indeed.

The key to your salvation is information. Everybody has their past or some little skeletons in their cupboard that can be used as a lever. All you have to do is discover where to apply the pressure. Useful commands here include asking or telling someone about something and following them to discover their daily routine.

Part of the packaging gives you a short what you've up against. Included in a cassette that, on one side, has a recording of your meeting with the boss just as he informs

you of your promotion. On the reverse side is the same conversation playfully edited so that you have just given what amounts to a full confession.

The writing part of the documentation comes on fifteen pages (what else?), along with several pages containing useful telephone numbers of characters within the game and details of appointments. There are also Magnetic Scrolls' unashamed hints – you can get a chat by typing in a whole series of seemingly random letters but whether the information obtained is useful as not is another matter. If you don't feel the need to chat, at least you can't stumble across the information accidentally.

The puzzle is by and large excellent although there are a few minor quarks, mostly involving getting to grips with some of the more complex commands. For example, if you open the valence in your office and examine it, you discover a badge and a share certificate. If you now type 'get all' you are easily informed that you don't see anything there even though you have just found it. You would need to type 'get all from the cabinet'.

Not every location is illustrated but those that do consist of a reasonable quantity, although I found it very difficult to be objective after having played the Amiga version. There are a number of graphic options available from none at all, through small colour patterns, to full illustrations.

The biggest difference though between the 8 and 16 bit versions is in the speed of operation. The 8 bit version is very slow indeed, almost every command needing to access the disk drive and waiting to read forever and a day. Very frustrating indeed, when even my typing ten words per minute is a good minute that it works faster than the game!

Corruption makes a pleasant change from total banking and if you fancy an easier view onto the under side of high finance, then this is a game for you. My only reservation will come if Magnetic Scrolls suddenly get floated on the Stock Market.

GMB

Touchlines

Title: *Corruption*. **Supplier:** Magnetic Scrolls. **Available:** Fall Plus, 24 New Oxford Street, London WC1A 1PS. **Tel:** 01-240 5539. **Price:** £17.99



*On the twelfth
day of
Christmas,
My true love
gave to
me...*

Twelve Printers Printing...

Although the range of printers available to Commodore owners may at first seem limited to Commodore's worthy but unsophisticated collection, a Commodore 64 RS-232 interface opens up the possibility of linking through to virtually any machine which may take your fancy.

Some applications, such as for wordprocessors, are no longer limited to typewriter-style daisywheel printers because the quality of PLQ printers has improved and most models of dot matrix machines, Laser printers and colour dot matrix printers, but offer the highest quality possible for applications such as the C64OS-based, GEOPublish DTP program.

The fastest, and strongest, machine is Princeton's four-headed 4810 Peripheral Printer and the latest machine from Sair Microson, the ILC-100 allows limited colour printing with a respectable range of typefaces.

Broder Compilers Prepress, 33a & 34a, Bowlers, Shipton Street, Andover, Hampshire SO4 3BD. **Comet Business Machines**, Hadden Road, Bedford Road, Croydon, Surrey.

Commodore Business Machines UK, Commodore House, The Southbank, Gardner Road, Maidenhead, Berkshire SL6 7LA.

Custom Computer Ltd, Bellington House, 4-10 Cowley Road, Uxbridge, Middlesex UB8 2XH. **Printex (UK) Ltd**, Dorland House, 38a High Road, Wokingham RG1 6UH.

Art, c/o State 2, One 3, Lansdowne Woods, Wade Road, Banbury OX16 9UN. **Micra Prepress**, Inter 3, Wade Road, Banbury, Oxfordshire, OX16 9NE.

Princeton Software Ltd, 6 Park Terrace, Weymouth Park, Surrey KT4 7JZ. **Quine**, Quine House, Park Way, Newbury, Berks RG11 1PR. **Sonic Corus (UK) Ltd**, SCM House, North Circular Road, Stonebridge Park, London NW10. **Sir Microson**, Craven House, 40 Uxbridge Road, Edgington, London NW3 3RS.

Triumph Adler (UK) Ltd, OEM Special Products Division, 27 Cornwall Road, London EC1. **Yankee**, 1000

The 12 Days of Christmas

Eleven Music Makers...



Whether you use the in-built SID chip or a half-blown MIDI interface, the music capabilities of the C64/128 are broad enough for the most discerning user. The enthusiast can experiment with keyboards, sound digitizers, drum machines or music-composing software and hardware. Always bear in mind that you only get what you pay for, and the quality that you require may cost a little more than you think.

The best bargain is still the Commodore Sound Expander, which offers affordable FM synthesis on a quality keyboard, with up to 32 preset voices which can be expanded upon by using the add-on FM Composer/Editor package.

Since its arrival, Soma has made

A CHRISTMAS CAROL

you're an expert on the C64/128 MIDI music (was there life in MIDI before Super?) With extensions and software, what more could you want?

Commodore Sound Expander C64/128
Music Sales Ltd, 4-9 Fins Street, London, W1V 5T2.

Amiga Master II/14/Mouse Master 128
119 High St, Watford, Herts, WD1 1PF, Music Sales Ltd, 4-9 Fins Street, London W1V 5T2.
Superior MIDI Interface

The Advanced Mouse System C64/128
Resident Software, First Floor, New Oxford Street, London
Microcon Sampler C128/93
Supersoft, Winchester House, Canongate Road, Walthamstow, Middlesex E13 1UJ

Dwarf Sampler 128/93 - David Electronics, Unit A/9, Denbury Road, Fenton Industrial Estate, Fenton, Stoke-on-Trent
Super Sampler by Super
Rhythm King 128/93 Supersoft
Combi Drive C128/93 David Electronics
MIDI Answerer C64/128/93
Electro-Music Research, 14 Mount Close, Wickford, Essex SS11 8HQ
MIDI Answerer 128/93 David Electronics

Ten Games For Playing...



Any basis for a great game collection should include at least the following:

Blackadder's Guide to the Galaxies - Infocom/Microware
Orion - Heaven

Strife - Electronic Arts
Impresario Master 128 Gold
Ultima IV - Origin/Micropak
Memory - Novagen
Centaur - Peridot
Galactic 128 Gold
Lost Mine System 3 - Microware
Death Fighter - Micropak

Nine Picture Painters...



Graphics on Commodore Computers can only be fully appreciated through a good art package with lots of extra tools

Stringy Paddles 812/93 - David Electronics

The Advanced CCP Art Studio C64/128 - Resident

The Amiga System 128/93 CRL

Artistic 128/93 - Wiggles
Cadillac (plus free lights) 128/93-
Troy
Mouse 128/93 - Stack Computer
Products
Dwarf Mouse 128/93 - David
Electronics

AMX Mouse 128/93 - Advanced
Memory Systems
**Dwarf Lightbox (supplied with String
Paddles)** C64/93 - David Electronics

Eight Books for Reading...



Although many books have been written for the C64 and C128, many are now difficult to find or are simply out of print. To help you we have included all of the information we could find, in the format: title author - publisher - ISBN - page

The Commodore 64 Programmers Reference Guide - Commodore Business Machines/Sams & Co Inc - ISBN 0-672-23858-3

Advanced Commodore 64 Graphics and Sound - Nick Humphries, Collins - ISBN 0-00-233398-6 £3.99

Commodore 64 Mouse - Ian Waugh - Sunshine Books - ISBN 0-946460-78-3 £3.95

Computer's PCU 20 and Commodore 64 Test Kit - Kernal - Dan Heath Computer Publications Inc - ISBN 9-942186-03-7 £13.95

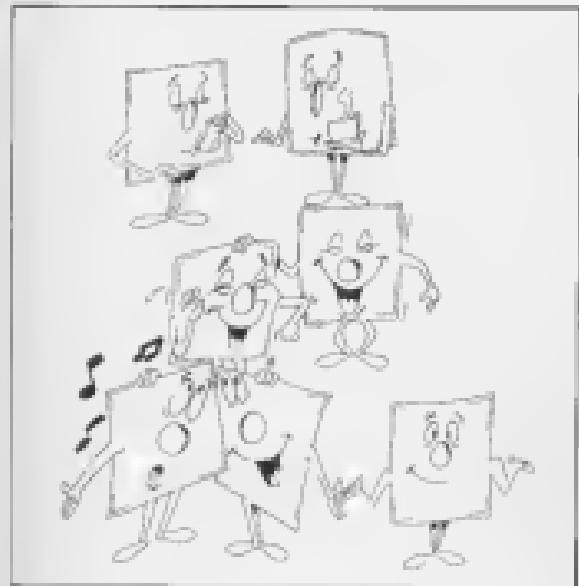
Mastering Microsoft Basic on your Commodore 64 - Mark Gorenstein - Addison Wesley - ISBN 0-975404-04-4 £7.99

The Amiga User's Manual - A.R. Dentley, W.H. Petersen & Co - ISBN 0-7147-1919-8 £10.95

Basic 128 Training Guide - Paulus Keppens - Ahorn Software - ISBN 0-916439-44-3

The Anatomy of the Commodore 64 - Alexander, Becker, Eggersch, Goris - Adacis Software - ISBN 9-916479-08-1

Seven Disk Companions...



A part from Telegate's Datacom Doctor and Multi Associates' Load It In, there are very few aids for cassette users on the disk users' benefit front this section.

Disk Doctor from Telegate has established itself as one of the easiest to use disk management tools which has the advantage of having the test programs on tape and only costs £14.95.

£57.95 AT&T carries the listings of the C128D disk drive £24.95 from Financial Systems Software Ltd. Dolphin ZIOS is tricky to install and requires a certain amount of dismantling of the C64 circuit board but is well worth the effort. Avantum Micro will the kit for £99.95.

The Maxxer QM 990 from Scantron is a cheap way to double your disk capacity. This handy tool punches a hole which creates the unused side of the disk media. Maptronics are the UK distributor of Scantron products.

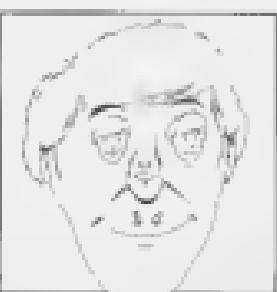
No disk drive owner should be without our sister magazine, Commodore Disk Plus, which offers a host of useful utilities, games and special programs with programme listings and pages reserved for the

magazines itself. CDS is priced monthly at the bargain price of £3.95.

Disk need to be protected from dust and stored safely. There are many disk boxes on the market for around a tenner but the super robust version at £14.95 looks like it, which has its built-in budget alarm!

Screen disk users will find the book *The Anatomy of the IBM Disk Drive*, by Abilene Software, as invaluable and

Six Interfaces...



Interface Dell into two breadboards. Centronics and RS232 Centronics interfaces are generally preferred because the driver program and hardware is contained in a separate box and therefore doesn't take up any of the computer's memory. An extra benefit is that these units plug into the serial port, the normal port for port 0 on the C64/128.

Bios Boxes of Liverpool produce one of the cheapest parallel connectors available. The box comprises a memory resident Centronics device for £1.99 and a connecting lead (£0.99) which plugs into the user port. Bios Boxes own RS232 connector and software costs £49.95.

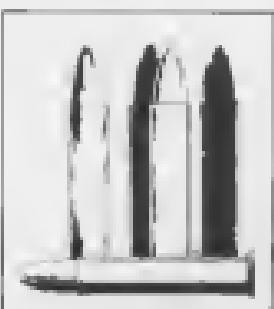
Precision Software's Super Centronics interface is a low-cost device with a few advanced features for £34.95.

Device One is more expensive but it does contain a 16K buffer and 30 special commands for formating, protecting and recovering special printer functions.

At £39.95, the Total Electronics Research RS232 interface is not as sophisticated as that of Bios Boxes but it still performs well and comes with its own driver software.

The Amico Super Graphics Gold is the ultimate interface. It has 128K of RAM, eight switchable operating modes, 30 secondary addresses, 16 printer formats, four external screen dump, four built-in fonts, and so on. In fact, everything you could need for a colouring unit for the computer to print.

Five Cartridges...



Cartridges are usually considered to be the computer's poetry but last

they can do more than just drag. They all contain disk readers and the speed is expressed as a multiple of the normal loading time which is taken as 10 or one tenth second.

The familiar *QuickeDisk* (Brentwood Models) are reflected by its low price of £19.95. What it does, it does well, but it is basically a fast disk (360 KB) and no cartridge.

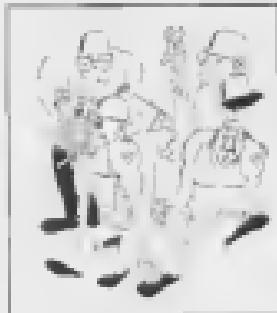
Front Machine, also from Brentwood, costs more (£29.95) but it actually contains two drives (one disk operating system (just 9%), and the other 17%, faster but using non-standarded magnetic tape) and a tape ratio which increases tape loading to professional standards.

The *Floppy Clippard* (£19.95) and (£39.95 from Data) which is conveniently appealing but not fully thought through. It does, however, have an excellent program compactor and extended Basic and reader disk speeds approaching 100.

Trilogic's Expert controller (£19.95) has the benefit of being RAM based so that updates can be acquired cheaply. This does have the disadvantage that it has to be re-booted each time the computer is switched on, but it does have a cache which makes speeds equivalent to Action Replay and every conceivable facility except for an extended Basic and direct memory access.

Action Replay Professional IV has everything a ROM-based micro-called Warp 25, a low extended Basic commands and a monitor which operates on the disk directly memory as well as the computer's. At £34.95 it offers very good value for money.

Four Assemblers...



An assembler is an essential tool for a machine code programmer. It

even amplifies the enormous overhead of programming by allowing labels to be allocated to often-used memory locations. The problem is finding any assembler in the shops.

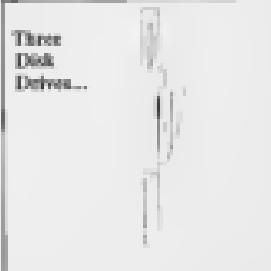
Micro Assembler from Supersoft is really for newcomers to the assembler arena, but the £27.75 price tag is a little heavy, though this hasn't dissuaded many people from buying this very useful cartridge.

Werk Electronics Research's 6502 ASM at £32.99 is much more the price which a beginner would want to pay, but this does mean sacrificing a few of the more advanced facilities.

Merlin IBM is an excellent choice, only by virtue of being the only assembler for the C64. It is available from Financial Systems Software.

Speedy Assembler is our own assembler which is an absolute rip-off at £6.00.

Three Disk Drives...



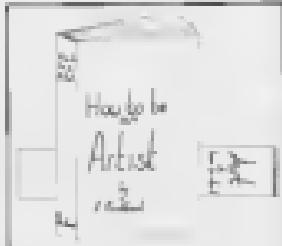
If you want compatibility stick to the 1541 or 1570 as the general advice that many computer magazines would give, but there are other reliable options.

The *Commodore 1541* is a late-comer to the field and a very odd beast it is, too. It uses 3.5 inch disks which have a capacity almost five times that of a single-sided 5.25 disk. It makes a very useful second drive for those who need to store vast amounts of data.

The *Oceanus Drive* was formerly also known as the *Excalibur*. It is a compact unit which is fully compatible with the 1541 and can be bought with £69.95 (in £29.95 from Brentwood Models).

The *Blue Chip* is Data's chunky little drive which is sturdy and seems to be closest to the 1540 in every respect apart from styling. If it's style you want, this is for you.

Two Graphics Pads...

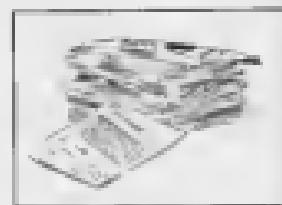


Most people use pens/pads or mice for designing free-hand screen bit pads can help. If a drawing is layered over the pad, it can be traced onto the screen using a small stylus. You won't get a perfect picture that way and it will need to be traced up using a joystick or mouse. What it does do, however, is to help the user to tackle proportion and perspective to give professional results.

Koala Pad virtually stands alone in this field. Most software is made to be incompatible with it but compatibility is not all it should be. If you can find one, grab it quickly.

The *Siemens Graphics Tablet* lacks compatibility with the Koala as it is not as well supported. Its one advantage is that it can be easily obtained through Microprose.

And an Order for All This Year's YCs...



The best way to decide what you want next Christmas is to read the many magazine which specialize in reviews and programming techniques. As your skills grow, so do your needs and we all have to help you make your next choice a good one. A subscription only costs about the same as a good adventure but it will last you longer and take you through the changing landscape of the world of Commodore.

Andy O'Nan

“THE MAIN EVENT”

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BASIC PAINT

Press A Key To Continue

Basic 8

Basic 8 is a Basic extension with features not found in the standard BASIC packages. The main command, `Paint`, is a complete graphics package of its own, using Tim R. Wagner and David P. Davis' (Say what!) thought that was too much space in the *Big Apple*.

No less than 100 commands are added to the 160 commands in the package, some of which are more advanced versions of the 160's existing commands. The authors have designed it as a graphics oriented language, and include a complete set of help files.

Using the language for some of the 64+20 that defines graphics, such as creating in 3D space through the extensive 3D graphics module, or 3D+2D, means that the user is not limited in and out of the screen. Both perspective and parallel viewing of the objects is possible.

Because this Basic 8 can have a number of valid "3D" commands, these are based on algorithms developed by Richard Brundell for the C64 version from his company, *Brundell Software*.

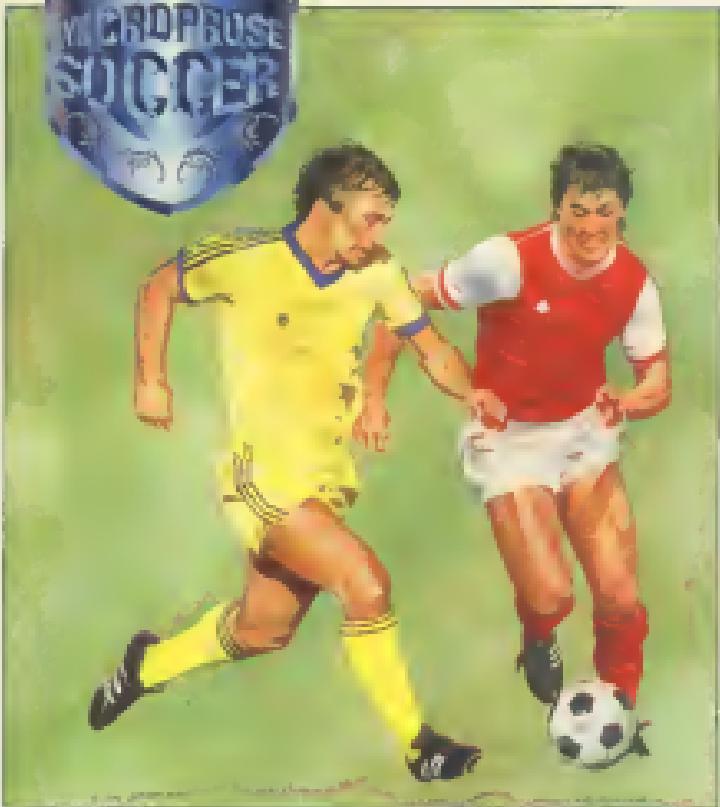
With the addition of cylinder, spools and toroids in addition to random shading, of all objects that at least makes Basic 8 unique.

Though Basic 8 is a complete language, the package also allows one to define multiple windows to put text and graphics in. Text can be in any

font chosen, using a variety of methods, and you can set parameters to alter the height, width and so on of an object just. A special form of the `Paint` command, the logo routine, will generate up to complex text structures such as one's name and implement them as one's command.

The package contains a host of other features in it as full menu support. With an example there is personal quality since the package also contains *Basic Paint*, a very efficient graphics package based on *Scenic*. Which I believe is a little slow. But what an application it's written in Basic.

The best thing of all is that unlike many other packages, the developer doesn't mind other people using the Basic 8 package to set up their own complete programs. This makes it easy to write your own package or any one thinking of developing their own graphics software.



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The Games:

Following the release of *Winter Edition* in the summer, *Games* plans to complete its unique double by releasing *Summer Edition* in the winter! But this is more than just another in the "Games" series - it has 3D action and a brand new style of presentation.

It was also the official game of the US Olympic team in Seoul, so it's hardly surprising that all of the events included are either currently held by Americans, or have been the source of past US Olympic glory. There are eight events in all, and up to eight players, representing any of 24 nations can compete simultaneously for gold, silver and bronze medals.

After an opening ceremony showing scenes of Seoul, the screen shows a top down view of the Olympic village, and then the games begin. The first event is diving, giving you the chance to name the events, if not the squares. Al American medal winner Greg Louganis. You have three chances to impress the judges with acrobatic dives and twists, and a single splash can detract your chances of a medal.

Velodrome cycling is that curious sport where riders travel around the track at a manic pace before sprinting for the finish. If you've ever wondered why they do this, try sprinting from the start and you'll collapse in a heap by the end of the first lap. The success lies in being pulled along by the section of air caused by another bike, allowing you to conserve your pedal power in the finish in the split



second display, a top down view of the track; plot each rider's position, but two 3D close-ups let you see the action.

Next you go into the gym for the weight lifts and the dashes. Both are demanding and exhilarating televised events, where the slightest slip can send you plummeting to the ground and out of the competition. The two events are superbly displayed in 3D graphics, but are amazingly different. In the square lifts, return and turn to swap you from bar to bar in an alternating place, while the rings require strength to hold and maintain swinging positions.

Hammer throwing demands strength and timing as you swing the hammer around your head, then spin across the circle before launching it into the field. Once the hammer has been released, the display moves to an angle set in the field and you can see the hammer soaring towards you, perhaps for a new world record.

Next it's Fit Nurse time, with the handles waiting to trip the nursery. Here it's the fastest race that counts, as all you have to do is get down the track as quickly as possible, negotiating the handles as best you can. Obviously stopping slows you down, but as long as you don't actually fall, you'll stay on your feet and in the mould.

The pole vault is a tricky technical event in which you must bring together a spring to the bar, the lift with the pole and then running over the bar. It all comes together, fireworks go off and your joyful athlete celebrates with a Daley Thompson-style back somersault.

Finally, Archery demands different skills, judging the amount you pull back on the bow, aiming at the target and waiting for the wood to snap before you fire. Unfortunately, a 99 second clock ticks on the pressure, but there's enough time to fire three arrows if you keep cool.

The Games Summer Edition starts with a choice ceremony complete with winning podium and fireworks from your players for just one more game. Ultimately it's the 3D graphics that finally add a new dimension to a tried and tested winning formula. TH



To purchase

Title: *The Games Summer Edition* Supplier: Apogee (UK) £99.99 (gold), £69.99 (silver), £49.99 (bronze) Rating: 12A Tel: 021 326 1388. Morkham: 084/128. Price: £34.99

Summer Edition

I-C-P-U-G

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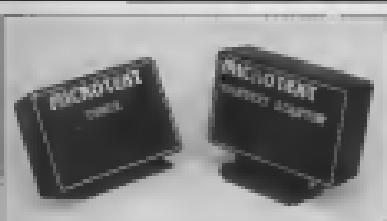
Everyone who would like to learn how to use or programme their Commodore computer then joining ICPUG is a must. For full details, send a stamped, addressed envelope to:



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Using tapes can be hard work. Make your life easier with this utility which sets up a loading menu at the start of your tapes.

By

Terry Wilks

The tape drive systems of home microcomputers such as the Commodore 16 and Plus 4 are more simple and far less versatile than the large complex drives of mainframe computers. They do, however, retain the benefit of being an inexpensive program storage medium. Microcomputers, of course, have progressed considerably in the past ten years but one of the annoying features of their use is the lack of ability to load a program from tape that will automatically run at the beginning of the loading operation.

Basic programs are no longer a problem. They only require the entry of `RUN` plus `RETURN` from the keyboard. Machine language programs are another matter. Most of the machine programs will require their own precise start address to be entered. Good programming techniques do reduce the chances of losing this address but there few many of us keep a perfect log? There will be many occasions that will require a time-consuming search through old programmes to find that start address.

The program presented in this article overcomes the limitations of the tape-operating system and allows both Basic and machine language programs to self-start. This removes the inconvenience imposed on start addresses. The Basic portion of the utilities program is fairly long, however basic interactive checks of the utilization of the computer's RAM space are carried out to ensure that no program hangs over.

The program also allows address data required for the utilities program to be entered in either decimal or hexadecimal format. During entry of the data, it will be necessary to specify data type. One of the problems that can occur with this type of entry system is neglecting to specify data type; should this occur the user will be

Plus/4

Tape Auto-run



flagged with a double question mark at the beginning of the line following the input line. Do not try to enter data type on this line, simply press `Return`. A prompt will then appear requesting data type, and once that prompt is answered the program will continue uninterrupted.

In case of Save the program before running as it will destroy the Basic portion of itself as soon as the required information is entered. I have not incorporated a verifying facility, so be

sure that your own program is used by the normal method first. To load an existing saved program, simply type `LOAD=` `LOAD=FILE NAME`. All of the necessary Zero Page pointers will be taken care of by the `SETUP` portion of the saved program.

Getting it on

The program is mostly a Basic listing with a machine code loader section. For help keeping this see our Loading page.

If you've considered
writing for us,
but haven't got a
wordprocessor,
here's a little something
that may help

By Darren Rawden



Dazpro

Although Dazpro is a very simple text processor, it should meet many of your needs. Simple it may be, but it will still allow you to do such useful things as creating and justifying and adding headers and footers. Just the thing to get you started on that novel or a novel!

Operating Instructions

Dazpro is always entered, once you have typed in the Basic loader, by entering **SET 4000**. It's then just a matter of typing in text using the usual Basic editing functions. Dazpro colours are changed as follows:

Change border colour **CTRL/1**

Change screen colour **CTRL/2**

Change text colour **CTRL/3**

All other features are implemented by pressing Command Mode, which you do by pressing the **F1** key.

Set left margin **F1+L**. You must then enter left margin value, which

must be less than the right. Value should be two digits with leading zero if necessary, for example '02'. The figure must also be between 0 and 79 inclusive.

Set right margin **F1+R**. Constraints are the same as when setting left margin. Obviously the setting must be greater than that for the left margin.

Insert line **F1+INS** at cursor position.

Delete line **F1+DEL** at cursor position.

Justification on/off **F1+J** - This is a toggle for left justification of text. An 'A' will appear on the top left of the screen to show that this is on.

Right alignment on/off **F1+A**. Toggle for right alignment of text. An 'A' at top right will show that this is on.

Conressing on/off **F1+C - A 'C'** in top right will show when this is on.

Key-repeat on/off **F1+K - K'** in top right shows when this is on.

Save file (page only) **F1+S**. You will be asked to enter a filename up to ten characters in length.

Load file (page only) **F1+L**. You will be asked to enter a filename up to ten characters in length.

Print file **F1+P**. A Commodore printer, or an interface which emulates one will be needed for this.

Go back **F1+** - Moves the cursor to the end of the previous line.

Clear memory **F1+RMM/STOP** clears all text, screen margins to default values and returns all text formatting.

Note that after any I/O operation, such as saving, loading and printing, all margin values will be reset to default and the cursor will be located. Default values for margins are 03 left and 73 right. All text formatting features will be cleared.

Dazpro is supplied in the form of a Basic listing, please refer to our Listings pages for further help for further help.

Final Assault

From the game's title, I must confess that it was expecting some sort of SAS-style shoot-out. That it would prove to be a mountaineering simulation came as a great surprise. Climbing large chunks of rock starting out of the ground was not a sport that I had ever imagined as being suitable for conversion to a computer game. Nevertheless, that is what Infogrames' colleagues with Eidos have managed to come up with.

Most of the top peaks in Europe are available for you to test your skill on - Mont Blanc, Jungfrau, the Eiger and the Matterhorn. Names to make any budding Chris Bonington quiver in his chamois.

The play goes easier when you sit back on your comfy armchair, deciding which of the routes you are going to attempt. These are no grades, very intermediate and who's a little show-off than. For real climbers, up to three trails can be attempted one after the other. As you select each route, you are shown its name, elevation in metres and estimated time for completion of the climb - assuming that you don't fall off too often.

Now comes the important part - deciding what you are going to take with you. The backpack can hold up to 25kg of gear. Actually, it can take more but every extra item that you pack increases the likelihood of you moving in the opposite direction to that which you would like to go.

The items to choose from are many and varied. Some, such as ropes and harnesses, are obviously essential. There are a whole range of them with including check, jumars and carabiners. Fortunately, the instructions include a handy glossary so you know what it is you are lugging about with you.

Then you have to keep warm, so there is a range of clothing and sleeping equipment to include - anoraks, mittens, hats, snow goggles and the like. Food and drink must also be carefully planned. Some foods are obviously faster than others for giving maximum energy for minimum space taken up. You will also need a compass, plates and some sort of the spares.

The last group of items are the luxuries which you can pack if have any space left over. A bottle of champagne might be a good way of celebrating but who in their right mind is going to want afterwards? Knowing how it affects

at sea-level, can you imagine what it is going to do to you face at 12,000' metres? Still, the game was written in France and we all know what a strange lot they are! All this is very clever, coming from someone whose face hasn't been red a once for the past ten years - ed!

All that remains to do now is to decide what time of day you are leaving and whether it's sunrise or sunset.

Once the journey has started, there are three main types of terrain for you to overcome. The easy one is walking where the ground is flat. A quick weight of the joystick gets you walking and you only have to remember to jump over the ravines. A similar idea is used for climbing the cliffs. After putting on your chamois, you need to build up a rhythm of digging in your toes, lowering one foot, pulling yourself up and taking the second foot.

By far the most interesting part of the game is the rock climbing. Each limb has to be moved separately as you search out the best hand and toe holds. Once you range these across to various to non-existent. Whilst these solid holds are admirable, allowing you to move the fourth limb safely, this is not always possible. This means you are faced with the job of not always moving to the correct spot and you have to work quickly as well to locate a safer hold on things.

The tool bar has to take a not extremely straight up. You will have to measure, or even move down, to find better holds. You must also take the necessary evasive action if rocks start to fall on top of you. Whilst the going get too tough, you can always use your rope to help you out, but remember to pack a partner so that it can be recovered again.

I must confess to going into this review expecting to be bored silly. Instead, I found *Final Assault* to be both interesting and challenging. Presentation and control of the game are above average and it really does make it pleasant to play something original for a change!

Gordon Blundell

Final Assault

Take Final Assault Supplier: Eidos/US Gold. **Disk 3.5" 2Mflop B/W:** Halford, Birmingham B6 7AL Tel 0121 555 5555. **Price:** £14.99 (Disk); £19.99 (Cartridge).



Collectors' Items

Why not fill your Christmas stocking with a few legends?

US Gold

Complainers are the No. 1 class of stocking fillers and by the looks of things this year's forecast cannot be bulging with cultists.

The big names seem to be bringing out real stinkers to woe you down, from the Christmas padding *All that man and more a turkey in sight!* *Bonfire*

With *U.S. Gold*, *Oasis*, *Rom*, *Grimm* and *Boss Jolly* all vying for a slice of the action, how will anyone find time to buy the half-a-dozen new releases? *Gold*, as the compilation games aren't broad speaking now, but they do represent excellent value for money. What better way to fill a gap in your collection of games or to get a new one off to a flying start?



Advertisement

US Gold are post masters of the art of compilations and have released four packages guaranteed to get your mouth watering.

The first and largest package is moderately entitled *Horror in the Making* and contains 13 of their bestselling titles which have been released over the past four years.

Brash Head and its sequel, incongruously called *Brash Head II*, offered Second World War shoot-up action as you try to break down the enemy's defences, using a combination of guns and grenades. If doing fast vehicles is more to your taste, then how about *Spikespeed* which combines driving skills with the ability to shoot straight, or *Supercycle*, the motorcycle simulation from Egypt.

Cannibis caused many head-wounds with *Roots over Moscow*, when certain elements of the media objected to the game. The game itself is a fantastic shoot-em-up, even if you are left to do the shooting to who are the baddies.

If alien invasion confers a merit to your game, then *Ring of Fire Master* gives you the chance to kick and punch your way past hordes of goblins, dragons and the like. *Brave Lee* continues the martial arts theme but combines the best-cowboy elements with a platform game scenario.

Further platform games on the package are *Goombas*, based on Steven Spielberg's film and *Desperadoes Mexico*, one of the best games of all time, if only for the unmissable speech effects - "Destry has my ropes!"

If strategy is more to your liking, have a go at *Defenders*. First you have to fly a helicopter deep behind enemy lines before launching a hoverman raid on the enemy's home base.

For the sports-minded amongst you, *Breakthrough* is still the best golf simulation around (see below for more detail). *World Games* gives you the chance to try your hand at tennis, golf, cycling, weightlifting, cliff diving and other diverse pursuits.

The last batch of games are all newcomers from arcade classics. Is there anyone, anywhere who has not heard of *Gaster*? Think of it! Well in that case, the game involves exploring and fighting your way through as many dangerous levels as possible using one of four different characters.



Gold Silver Bonus



Rolling Thunder

Likewise, it seems anyone who has ever watched the cartoons also has not wished that Willy E. Coyote would catch that awful Roadrunner just once!

Fatally, there is *Expert Racer*, a Mission involving plenty of shooting and jumping from train to train and all the other typical things cowboys do.

Memory, like *Mazing* costs £24.99.

At the time of writing, the Olympics are in full swing and as usual, there is the tendency to play the archer expert. If your address provides extracts no further than the archery (all my expertise stopped when I got a watch that didn't need winding) then perhaps *Gold Silver Bonus* is the package for you. Comprising the first three multi-sport titles from Epyx - *Summer Games I* and *II plus Winter Games* - you get the chance to make an idle foot of leisure in the privacy of your own home in no less than 23 different events.

The Games range from traditional track and field events such as pole vaulting, 100 metres, high jump and javelin, through the more unusual sports of swimming, diving, shooting, cycling, pentathlon and discus throwing, to such winter wonders as biathlon, bobsleigh, slalom racing and figure skating. *Winter Games* has caused more hilarity in our household than any other game, before or since.

If you have not already seen these games, they really are superb, especially if you get a crowd of you playing at the same time. *Gold Silver Bonus* costs £14.99 from £17.99 (disk).

For anyone fancying themselves as the next Sandy Lyle or Nick Faldo, this next compilation is indispensable. Even if you are not exactly keen on golf, this collection of games based on Leadership is undoubtedly one of the best sports simulations programs written to date.

Battled Part I, the package contains of the original game plus the Tournament, Executive and World Class editions. As well as offering a wide range of courses, these sets offer enhanced graphics and simpler gameplay options should you find that your touch with the joystick wedge is getting too good.

For anyone who has not seen the game before, you must select your club for each shot and this judge how much power to use and whether or not to hook at this point shot. These last two variables are decided by judging where to stop a sliding bar display.

All the normal features of golf are present - bunkers, water hazards, cross winds, trees and sloping greens. There are three different skill levels and up to four people can

play simultaneously. At only £14.99 for the cassette version, that has got to be a great bargain.

The final compilation is entitled *Games* and features all of US Gold's more recent releases. *Gamblin' H* is the sequel to the game that spawned a thousand clones and is packed with over one hundred new levels and many new features. There are more traps to avoid, enemies to kill, secret rooms to be discovered and, of course, bags of treasure to be picked up.

Rolling Thunder is another arcade conversion. You are part of an underground police organisation trying to infiltrate and expose a secret organisation plotting to overthrow the world. This is a race against time to free your allies who are being held hostage.

Should you feel too cool and laid back to waste energy on some of the sports simulations mentioned above, how about *California Games*? A gentle game of frisbee, surf riding and skateboarding are amongst the events on offer here.

Skateboarding is also the name of the game in *SP*. The name comes from the ultimate香港ese available to you - two complete revolutions in mid-air. Before you get to be that master, you may need to hone your skills in one of the many skate parks where you can practice either freestyle or in competition.

The final game was one of the biggest hits in the arcade during the course of last year. In an open-top sports car with your best girl by your side, choose your route and try to complete the various stages of Obstacles within the time limit in order to progress on to the next one. Quick changes of gear are essential if you are to avoid the obstacles both on and off the racing, accelerating road.

Games will appear on the new Worldwide label in time for Christmas, but the price has yet to be announced.

Ocean

Ocean produced one of the best compilations of last year with *Game Set and Match* and so it comes as no surprise that *Game Set and Match II* is on its way. Details are still vague but it will probably be another 20 event pack and will include *Breakin' Away*, *Match Day II*, *Tennis* and *Field*, *Nick Faldo's Golf*, *Janet Jackson's Choices*, *Steve Davis Snooker*, *Super Hang-on*, *Tigardale-1* and *Winter Olympics*.

Another Ocean offering is still to get a name but the

supposedly has up its sleeves when Remco's eight games including six number ones. So if you're looking for a big value pack and you only have one or perhaps two of the following then click this up as a must for Christmas as it includes *Cooker School*, *Guitar Heroes*, *Last Days*, *Predator*, *Arrows*, *Tarantula Renegade* and *Berserk*.

Elite

Elite is famous for it's Breakout series of compilations and produced the first one containing only its own games in the form of Elite Volume 1.

Regular readers of *Your Computer* will know that whenever a software house puts Volume 1 after a title you know there's a Volume 2 following shortly. Just to keep you guessing this has called the compilation *Frank Bruno's Big Box* which contains 10 games including *Frank Bruno's Boxing* (surprise, surprise), *Commando Ghoul* and *Golden Goose Disc*, *Ali vs Wolf* and *Bomber*.

Elite and Friends is the imaginative name for a five game pack containing fighting action from *Thunderbird*, *Lair* and *Star Fighter* and a dose of racing from *Broken Race* and *Race Boy*.

Gremlin Graphics

Gremlin Graphics is well known for it's big value compilations and was one of the first to enter the arena

with it's Star Games range and, more recently, it's Great Games which up another fist by including so many hits in one box. Gremlin has three more compilations lined up for this Christmas.

The *Mega Games* Volume 1 is the first from the selected Star Games series and packs *Cybermedic Defector*, *Time To Force*, *Mark M. Blood Blaster*, *Hercules Mountain*, *Traxxx*, *Blood Valley* and *Master of the Universe* into a single box.

Fighter Ace is a six game pack and the sequel to the popular compilation *Angry Star* boasts high flying and fast Advanced Tactical Fighters. *Space Force Marine* (graphix 40, 80K) *Breakout* and the highly controversial and much fan liked off.

Similarly, you could travel into the future with *Space Ace* and tackle *Space Striker*, *Back To Space*, *Colonel Nathan*, *Cybermedic*, *Dangerous* and *Neutron* in a seven-game pack.

Beau Jolly

Finally, look out for the latest releases from Beau Jolly. It's a company that doesn't get in the sheer of publicity in magazine coverage but works hard in the background to compile formidable compilations.

It's current offering is aptly named *Supersoft Challenge* as it packs *Alien*, *Armored Team*, *ACT II* and *Starglider* in the same box for only £12.95 (boxed) or £10.95 (disk).

£250

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UDG Compressor

Make way for more user-defined characters by wiping out the duplicates

Anyone who writes games or programs involving graphics will know the simple technique of placing user-defined characters in a grid to make a larger picture. One problem with this technique is that duplicates often occur when formed. This usually becomes a problem when you have filled your 256 characters already and wish to add more. The basic program related with this article will search your character set for duplicate characters and then, upon your direction, delete them in one of two ways.

Getting it all in

The program should be typed in using the Syntax Checker program and then saved to disk or cassette. Thereafter, whenever you have finished creating a character set or have filled up the 256 characters and wish to add more, load your character set, type NEW and then load the UDG Compressor program and run it.

Even if you believe that your set has no duplicates, you should still run the compressor on it because it often picks up duplicates that the human eye misses. When I tested on a copy of the Commodore ROM character set, I found ten duplicates.

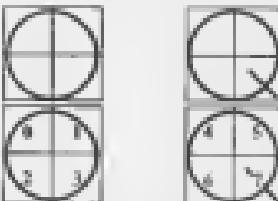
Using the program

When running the program, it first asks you where the character set is stored in memory (remember the character set should be loaded before the Compressor). It cannot be stored on any area of shadow RAM below \$1000 (\$1000 or the program won't recognize it).

The program then asks for the last character in the set. Once you enter this, the search will begin for duplicated characters. This search may take quite a while, as every character

in your set must be checked against almost all of the others.

Once the search is complete, the program will have formulated a table of duplicates. This table tells you which characters are duplicates of any of the others and should therefore be removed. If, for example, our character set contains eight characters (zero to seven) which form two grids to make up the letters O and Q as shown in Diagram 1.



The chances are that characters four (five) and six (six) will be duplicates of zero, one and two, respectively. A table of duplicates would look like Table 1.

CHARACTER NUMBER	IS IDENTICAL TO
0	none
1	none
2	none
3	none
4	0
5	1
6	2
7	3

Table 1 — Duplication table for Diagram 1

A character with five zeros in the right-hand column is an original whilst the others are duplicates of the character whose number is displayed. There are options to let the table be to the screen or printer. When listing to the screen, a key must be pressed after each row of information.

by Damien Marsh

You may now quit the program, delete the duplicate characters, and if necessary, compress the set. If you choose to delete the duplicate characters, you will be asked for a value with which to fill them. After the operation is finished, a conversion table will have been created which gives all the information that you need to convert the characters in your character set to their respective character codes in the new set. A conversion table for our example characters would look like Table 2.

OLD CHARSET	NEW CHARSET
0	0
1	1
2	2
3	3
4	0
5	1
6	2
7	1

Table 2 — Conversion table



Make sure you always keep a copy of the characters used to make up your grid when using this program. First draw a grid for each character block in Diagram 2(a).

0	1
3	3

4	5
6	7

Diagram 2(a) Original character grid.

Then draw another and set ready to put the new characters in. Look down the column on the left for the old character numbers and read across to find the new value in the right-hand column. Now write this new number in the corner place on the Mask grid. Repeat this process until all your grids are filled. Our example character grids should now look like Diagram 2(b).

0	1
3	3

0	1
2	7

Diagram 2(b) Deleted character grid.

As you can see, characters four, five and six are now unused. If you were now to load the new set on your character editor, you would see that the deleted characters are now filled with the code you entered earlier in

the Compress program. You could now fit all these characters with no fitting size without causing damage to your grids.

Using this method gives you full characters instead the original your character set. Instead of choosing to delete the duplicate characters, you may choose to replace them and compress the set. This method compresses the original characters down over the unwanted duplicates, leaving all of the blank characters at the end of the set. If you have a large set, this process may take a few minutes.

Over again you have the option of having a conversion table to the screen or printer. Use this table in the same way you would have if you had just defined the characters without compressing the set. You may notice, in the table created by this process, that some of the original character's numbers change as well. Using the method on our example set would produce Table 3.

Table 3 - Conversion table after compression

OLD CHARSET	NEW CHARSET
0	0
1	1
2	2
3	3
4	1
5	2
6	3
7	4

The character grids for the new character set would look like Diagram 2(c).

0	1
2	3

0	1
2	4

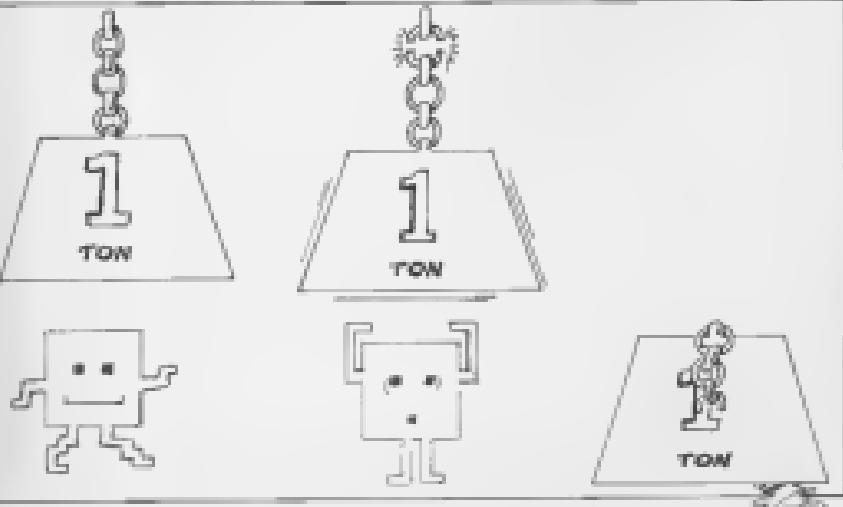
Diagram 2(c) Compressed character grid.

Whichever method you use, it is very important that you have a hard copy of the conversion table. If you do not own a printer, you should buy this table in the stores and copy it by hand. This may seem like a lot of work, but it is worth it in the long run.

The advanced games programmer or graphic artist will find this utility very useful indeed. To test the program, I created a character set comprising of the letters A to G, each as a three by three grid. The original set used over forty characters but it compressed down to less than thirty.

Final note:

There may be cases where you might accidentally wish to create a set of duplicates such as the letter O with the number zero. In this case, you will have to change one of these before using UDG. Compress and remember to change it back afterwards.



Mailbag

We give you a chance to express your views on just about everything from the world of Commodore.

Dear Editor,

I was interested in the Lifesaver No 12 for the C64 in the November 1988 issue. Commodore's The Illegal Quantity Error is not very helpful as your Lifesaver pointed out, but the article didn't go far enough.

As soon as the Illegal no-and-a-half message appears on the screen type, in three mode, the following:

PRINT PEEK (65yPEEK 104)*\$C

The C64 will now display the line number from which the last DATA line was read. Let the offending line, correct it, and the RUN the program again.

When entering loops, I always find it beneficial to insert a line within the FOR/NEXT loop that reads the DATA each time.

PRINT "LINE NUMBER"

"Line#100" is OK.

Where is, at the number of the first line of DATA, is the FOR/NEXT variable and the DATA line has ten zeros on them. After the values in the program that you are entering.

Now when you RUN the program you can see which lines have been entered correctly.

Incidentally I owned and used a knitting machine for years before I purchased my first home computer, a Vic 20 back in 1982. Like Mr Norman Scott, whose letter appeared in the October issue of the magazine, I also thought that it would be a good idea to formulate a knitting pattern so I did just that. However, I found that I never used the thing; all my previous knitting patterns were in my pattern book self-explanatory, and I referred to that when knitting something.

Mr Scott should try a computer knitting pattern and spin out on the Mary Warner book of Machine Knitting Technology and Patterns. There is a wealth of information for machine knitters and there is also a reference book for editors.

I sincerely hope that the info concerning the Illegal Quantity helps those readers who have not come across this before.

R T Goodman, Newmarket

Thank you for your tip about the *Illegal Quantity Error message*. However, as with our lifesavers, you don't quite go far enough. C64, Plus 4 and C128 owners may like to know that the same formula will work for their own machines. For the C64 and Plus 4 the formula is the same. C128 owners should change the \$J to \$G and the \$L to a \$B.

Mr Scott's letter about knitting and comparing certainly seems to have sparked off some interest. Mr Scott and other computer knitters may be interested to know about a knitting program that one of Your Commodore readers is using.

The program, called *Classic Styles*, allows a user to design knitting patterns for round, V neck, Raglan sleeve and Shetland jumpers using standard wool or your own measurements. Once the pattern is designed it is displayed on the screen for you to copy, or, if you have access to a printer, you can produce a hard copy automatically.

Classic Styles is available from T C Mason, 15 Inglewood Green, Ayrshire, Scotland KA7 4JZ Tel 0292 63388. The program costs £7.99.

Mr Mason is also producing programs titled *Pushkin Styles* and *Shells* in the near future.

No one at Your Commodore has seen the programs perhaps Mr Mason will send us a copy so that we can do a review... and replenish our collection of jumpers!

Dear Editor,

May I repay your magazine I find that I must write to express my dismay and frustration at the fact that, just as I am getting into a groove, it seems to disappear for a few weeks only to reappear when I am least expecting it. The Relative File programming seems being a prime example.

Being fairly new to computing, I am used to seeing that this is much the norm without the irregular breaks that seem to appear in your magazine. I find this very frustrating and I suggest that when you are unavoidable a brief explanation would not go amiss.

Having squared a C128 earlier this year, I am struggling to get to grips with programming, and find the type of article that you publish important to me.

Another small niggle. I note that the price of the November issue has gone up by 10p. Unquestionable, you would no doubt say, and I do not really object to paying it. But most magazines would make some comment on price increases. I cannot find any mention of it in this issue.

K. Hallinan, Chichester

Printing errors on a regular basis has always been something of an editorial headache for Your Commodore. The problem with our errors is that many of them tend to require the inclusion of lines in the end of the magazine. The Listings pages are one of the very last areas to be designed together with the news, comment pages and the like. This unfortunately means that sometimes we simply do not have the room to fit in every single item that we would like to include. In an ideal world we would of course know exactly how long the longest section of the magazine was going to be and exactly how many pages of advertising we are going to have to fit in. Unfortunately that simply isn't the case, we just have too many pages to fit in the magazine and we've got held.

We do make an effort to ensure that every error appears at least every other month.

We are investigating ways of publishing errors on a more regular basis - so you should notice a change for the better this year. Of course the age-old problem of our constituents not getting their credits to use when presented may well mean that we suffer a slight lull occasionally.

As for the price rise, yes, a rise of course unavoidable to cover our own increased costs. The timing of the announcement of the latest price increase did not unfortunately allow the editorial team time to comment upon it in the magazine. Even at £1.25 I am sure that you will agree that Your Commodore will offer a welcome value for all owners of Commodore computers who want to really use their computer to its limit.

Comfort and Joy

A joystick is an essential peripheral, but how do you decide which one to buy?

By Eric Doyle

It's impossible to say how many kinds of joystick there are, and even if I venture to guess a figure here, it will be out of date by the time that this magazine appears. Despite such competition, it's still a lucrative market, and companies like Kinnar have made their reputations solely on the sale of these little plastic marvels.

It's a vastly different story for the consumer. With most computer shops stocking just one or two styles, choosing the "perfect" joystick for an individual's need is not easy, especially since the purchaser can rarely test the stick before buying. Other considerations which probably form the principal motivation to buy are price and appearance. This is rather like buying a house because it looks pretty from the outside and seems to fit in a budget. As any house buyer knows, this approach can be fatal and any house must first be examined and then surveyed by a professional. In the end a may not be the prettiest looking house that is purchased, but the most suitable when all of the considerations have been weighed against one another.

A similar approach should be adopted when purchasing a joystick. Don't just dash in and buy the first stick that a store puts into your eager hands. Look around and decide which one you might like to own, ask the question if you can handle it, study any information that may be written on the box and then ask yourself a few questions:

Comfort and Quality

Is a pleasure to hold? Try pressing the fire button while wagging the handle in one of the effortful holds to cover

any strain on fingers or wrist. Bear in mind that both left-handed and right-handed people may want to use it, so would the position of the fire button cause any problems? Is the base too big? Are any extra facilities easy to use?

Does the stick look well-made? How does the handle feel? Check to see that it doesn't flop around. If it is a unswitched model, focus on the switches as you push the stick around. Do they make a definite double click when selecting the diagonal positions?

Remember that you get what you pay for and that the switches can be of three principal types. The cheapest units usually use bubble switches, contact switches are found on the mid-range and microswitches are usually only employed in the more expensive models.

Bubble switches are the simplest type and work on the same principle as the cheap, old, rubberised computer and television keyboards. A piece of conductive material is held over two terminals by a rubber or plastic bubble. When the joystick is moved it presses the conductive dome onto the terminals, completing a circuit between them, and the computer then receives a current through the corresponding wire. When the stick is released, the rubbery membrane springs back into shape and connects no longer. After a while, the conductive lining will cause the membrane to expand and, at the very least, the efficiency of the stick will be impaired.

Contact switches come in various forms but the principle is always the same. Usually the contacts are tiny metal strips which are held about an eighth of an inch apart. When the

joystick is operating, one of the contacts is pressed against the other to complete the circuit, and when the pressure is released the natural springiness of the metal breaks the contact again. On the Sunbeam Stick Stick this principle is translated in a different way. The metal arms which are at the ends of the handle protrude into a square well made in the stick's base. The red forms one of the contacts and each side of the well has a small metal plate clipped onto it to form the other contacts. As the stick is wagged about, the red moves in and out of the plates and the current flows accordingly.

Microswitches are the most expensive and most reliable system whereby a joystick can use. The movement of the joystick depends on small buttons which activate contacts housed in small plastic cases. The construction of the contacts means that the metal contacts can be forced to enhance their natural spring and the whole system is less susceptible to metal fatigue than the normal contact switches.

So far only digital joysticks have been considered and these form 80 per cent of the types on sale. Analogue joysticks also exist, but these are much more complex in their operation.

Internally, the stick is connected to two independently controlled potentiometers. A potentiometer is a variable resistor which operates like a volume control. On radio equipment, the volume control acts like an electronic tap and, as the control is turned it allows more electricity to flow and the volume increases.

Similarly, in the analogue joystick the electricity is increased or decreased

the further the joystick is pushed in one direction or another. This means that the A/D (analog-to-digital) converter in the computer has actually be programmed to detect how much current is flowing from each potentiometer and accordingly position the cursor on a bit-mapped screen. Games are written with the digital stick in mind and this means that they only consider two states, on or off (current flow or no current flow). In my experience, the current detection on the joystick ports is sensitive enough to detect very low current flow so that

an analogue stick can be the most sensitive and reliable of all joystick controllers.

The problem with all Commodore joysticks is that access to the A/D converter circuitry doesn't use the same connections from the digital circuit. This means that an analogue stick may be totally useless as a games controller, but some sticks that were produced for MSX computers are already wired in a configuration that allows them to pass for a possible Commodore joystick. If you can find any, they are excellent devices for raw,

and the survey will ignore analogue sticks because because buying one is a gamble if you can't try it out on a Commodore beforehand.

The Survey

Most joysticks will work perfectly well in the horizontal and vertical planes (N, S, E, W) but the diagonals (NE, SE, SW, NW) may not be so easy to obtain. This is because the switches are arranged so that only one switch's contacts have to connect for the main axes, but two closed switches have to be activated simultaneously for

	Model/Price Magnum £14.95	Details Mastercircuit Black base Red handle microswitches Single red button microswitch DS: flexible	Comments Finger-grip styling. The leverbase is mounted on the rear of the platform and could be the source of some strain with protracted use. Nicely balanced but slightly awkward to hold. Not particularly suitable for those with eyes
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	Model/Price Competition Pro £36.99	Details Dynamic Transparent base Red handle microswitches Dual red buttons DS: very good	Comments Exactly the same as the 3000 except that there is a special microfibre switch and the fixations are manufactured. The analogic is electronically controlled to simulate extremely rapid passes of the lever and should therefore work well in most games. The switch has an extra setting which claims to be slow motion. Take this with a pinch of salt - the control only passes the outputs from the direction switches so that the main character under joystick control moves in "slow motion", not the whole game. I'm going to think of an application for this, but if you can think this is the stick for you!
--	--	---	--

	Model/Price Tec 30 £13.99	Details Sonic Mastercircuit Cream base Grey handle microswitches Triple red buttons microswitches DS: good	Comments Despite the Precision-circling, ergonomically-designed handgrip, there's only one word to describe this stick: <i>tiny</i> . The handle feels sloppy and the fixations on the base are connected by a bar which rests on a crossbar in a see-saw manner. The result is an unreliable system which makes firing even more of a herculean task than usual. The joystick button on the reverse angle refused to work but this may be a problem with their particular stick - the lack of the damn
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diagonal sensitivity. This means that diagonal sensitivity is a good test for a single-purpose, quality joystick.

In the individual surveys, the Details column indicates the supplied colour of the base, handle colour, direction-sensing switch (yes/no), friction colour, fine-resolution type, and diagonal sensitivity (DS). The grading for DS is based on the using scale: poor, good, very good and excellent.

The Comments column forms a subjective appraisal of each stick and outlines any special features which the stick may possess.



The joysticks in order of preference

The Navigator
Blaster
Competition Pro
Competition Pro 5000
Magnum
Joystick Controller
Tec 10
Six Six

and a special mention for the Joystick Controller as a suitable second try



Model/Price	Details	Comments
Competition Pro 5000 £15.99	Dynamics Transparent base Red handle microswitches Dual red buttons DS: Very good	Although the direction sensors are microswitched, the flat button has linear-quality contact switches or plastic contacts which are susceptible to wear and friction. The handle has a positive feel and the unit is comfortable to hold.



Model/Price	Details	Comments
Joystick Controller £6.99	Spectrum/Mercury Black handle Black Handle bubble switches Single red button bubble switch DS: good	This is a later version of the 'Axon' which earned an excellent reputation as the official stick for use for that company's games in owners' mode. Realized that there was direct compatibility and demand, the official channel CBM stick for the Amiga design. Time has not been kind to the PC, but it can still hold its own against the other cheap sticks and is a good throwaway for those on a limited budget. For a bubble-controlled stick it is surprisingly responsive and reliable and is the only stick ever to have a replaceable switch board. Sadly, it's usually the handle that breaks off. The position of the bubble makes this a right-handed joystick.



Model/Price	Details	Comments
Six Six £6.99	Spectrum/Mercury Black body Orange/black handle contact switches Single orange button contact switch DS: poor	Despite the very compact design, this stick is very unresponsive. The root of the problem may be in its unusual direction-sensing switch arrangement, as outlined earlier in this article. The positive contact of the red with the plates isn't helped by the grease placed on the well to reduce friction. As a consequence, the balance is changed to squat the handle stem and can make electrical contact difficult. Diagonal stringing is apparent and the lubrication is right-handed.

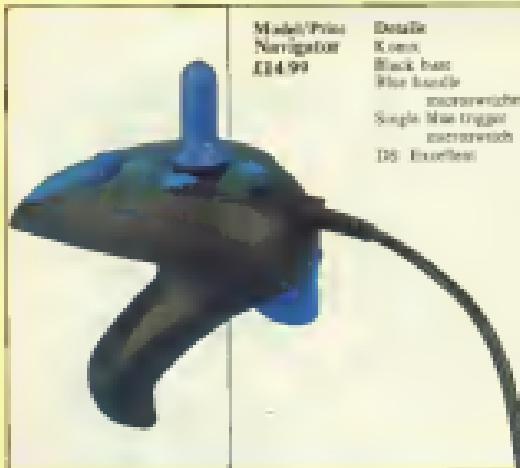


Model/Price
Blaster
£12.99

Details
Rapidyx Component
Black, red base
Red handle
microswitches
Dual red buttons
microswitches
DS: very good

Comments

Although this looks almost exactly the same as the Competition Pro stick, it does have a right edge. The direction setting, though adequate, could be improved by thickening the rim of the handle slightly. The selector switch is actually positioned at the front of the base so that it can be switched on and off easily while a game is in play. Compared to the Navigator system, this is the most fluid action to start shooting.



Model/Price
Navigator
£14.99

Details
Black
Black base
Blue handle
microswitches
Single blue trigger
microswitch
DS: Excellent

Comments

The Navigator is the new pistol-grip stick from Rapidyx and it looks like a refuge from Star Wars' science fiction movie. In fact, it's almost a dead ringer for a Star Trek phaser. On first sight, the stick received a cool, if not decisive, response in the office, but its superior, smooth performance quickly won everyone over. The diagonal aiming is really excellent and the design of the Navigator is a lot more comfortable than the Blaster. The positioning of the trackball on a pistol trigger means that the index finger can be used, which should make a more natural feel for first time users. The selector switch does not operate until the trigger is held, which makes it excellent for most games and avoids the possibility of overshooting through high score tables and menu screens. A brilliant stick which shows that Rapidyx has come a long way since its quirky Spend Ring design.



Model/Price
Joan's Tractor
£13.99

Details
Satinex/Marquise
Grey base
Grey handle
bubble switches
Single grey button
bubble switch
DS: good

Comments

This is not a gamers' stick and it doesn't even pretend to be one. It is designed for use as an icon and pull-down menu key selector tool, as such, it works very well. It is designed as a permanent attachment to the computer keyboard, and the plug has a second input port on it so that a conventional joystick or mouse can be connected simultaneously. As far as to GEDS, art packages and menu menus, it is well thought out and interesting. I have used it on an Amiga 500 and the coiled cable could just stretch far enough. Although the connection arm is fitted with a sticky pad, I feel sure that most users will want to bolt this one on more permanently.

Relative File Programming

In previous articles we have looked at how to create, enter and process RECORDS, keep housekeeping files separate and update them. Now we have arrived at the most challenging series of routines of all - deleting records.

By Eric Ramsay

Why should deleting records be so complex? Why not simply decrement the RECORD with a CHR\$(212), remove it from the RSRTD sorted RECORD number array, and that would be it, wouldn't it?

Well it's not quite that simple. If a file contained 100 RECORDS, for instance, and the user deleted #6 of them, and then entered thirty more RECORDS, the file would now contain 130 RECORDS, but 130 the thirty RECORDS he had previously deleted would still be within the file, lying below, as it were, taking up file space but doing nothing.

So we have to turn to the Delete RECORD programming, to do the following:

- Delete the actual RECORD from file
- Delete the RECORD in the sorted RECORD array
- Save the number of the deleted RECORD in a delete RECORD array
- Assign any other RECORD operations to the first defined RECORD in the delete RECORD array, then replace this entry in the delete RECORD array, and store the new RECORD in the sorted RECORD array

Delete record routine

I have found this routine useful in the house menu - after all you have to be looking at the RECORD in order to decide whether to delete it. This routine completes the house option programming.

The first lines are quite straightforward, they merely check that the user has not pressed the "Delete key by mistake".

```
3200 rem **** delete record
subroutine
3200 print"Delete RECORD -"
3200 print"Are you SURE (y/n)?"
3200 getkey$y$ if y$="y" then
3200 end ****return to menu
```

Having received confirmation, the RECORD deleted counter, DRNC, is incremented by one. The current RECORD number is then stored in the deleted RECORDS array, DRUDR%. Now the next RECORD variable, WRBC, is mapped to the RECORD number to be deleted, and DISK3 is declared as the sector character, CHR\$(33). Then the next RECORD subroutine is used to overwrite the current RECORD

BASIC2 users, do not forget your saved pointer routine 4114 before you go to the next RECORD.

```
1010 d$=drudr$(1)+chr$(41)
1010 l$=drudr$(2)+chr$(41)
1010 w$=drudr$(3)+chr$(41)
1010 g$=drudr$(4)+chr$(41)
```

Then, the RECORD is deleted. The number is still in the sorted RECORDS Array, RSRTD%. This means that the RECORD will still appear if you ask for that sorted number. Clearly, this will not do. We have to delete the RSRTD% entry in the array. We start a loop beginning from the number to be deleted and running through to the end of the file, RM.

```
1040 l$=l$+chr$(41)
```

Now we assign the RSRTD% number for the deleted RECORD to the next RECORD entry in the array, and so on through the loop.

```
1100 m$=l$+chr$(41)+chr$(41)
```

At the end of the loop, the deleted

RECORD number has disappeared, and RN is now 1 too many, since we have just deleted a RECORD. So I re-deducted from RN, and also from the PWD\$ variable in the *house* mode.

1000 usage remove-flo-disk-1

And then we return to the House keeping,

1000 goto 2000

So the deleted RECORD no longer holds any data in the file, but the physical RECORD space still exists. We now have to program to enable that RECORD to be used in the next other RECORD operation, otherwise it will be ignored forever, starting the loop again.

We add the following line to the other RECORDS section. This detects if there are any deleted RECORDs on the file using the deleted RECORD counter DRIC:

2100 ifrec >0 then goto 1000: go to 2600

If there are deleted RECORDs, the following subroutine is called:

1000 run 1000 usage deleted record
for i,write *:

Since we will always want to use the first deleted RECORD from the array, the WRIC variable for the write operation is assigned as RDRUT(1). The sorted RECORD array is given the number, and then the same number is deleted from the deleted RECORD array RDRUTs, using the same kind of loop you have already seen:

1000 write=rdrut(1) rrdt(1)
rdrut(1)=input1 to disk rem
(pc1=rrdt(1) pc1=1) write

Then, since we now have 1 less Deleted RECORD, 1 is deducted from the delete pointer, DRIC, and the program RETURNS to line 2000. The line then GOTOs back

1400 divede=d
1410 return

Effectively, the program has bypassed the original RECORD number assignment in order to use a deleted RECORD. All the housekeeping is updated and the new RECORD will remain at the end of the file until the next SORT. Now we have to add a new loop to the housekeeping:

WHITE_HOUSEKEEPING — BASIC 2+

```
200 n=LEFT$(“RISE”,”N,M,ME$”,”100”
110 dopen “X”, “(o15),w,prn$10
120 prnt “I,m,u,d,l,v,w,p,g,m$10
130 for a = 0 to c
140 prnt “1,f(d,a) p,g,m$10
150 prnt “1,f(d,b) p,g,m$10
160 next a
170 lopen “D”
180 prnt “1,m,u,p,g,m$10
190 dclose
200 prnt “1,r,r,r,r,p,g,m$10
210 next pa if rec=drec(1) then “
220 uses RDRUT$, d as DRIC
230 forop fop$10
240 prnt “1,m,u,p,g,m$10
250 next op
260 dclose
270 prnt “1,r,r,r,r,p,g,m$10
280 return
```

READ_HOUSEKEEPING — BASIC 2+

```
200 n=LEFT$(“RISE”,”N,M,ME$”,”100”
210 dopen “X”, “(o15),d,prn$10
220 input a “(o15),d,prn$10
230 for a = 0 to c
240 input a “(o15),d,prn$10
250 input a “(o15),d,prn$10
260 input a “(o15),d,prn$10
270 print
280 lopen “D”
290 input a “(o15),d,prn$10
300 next pa if dric(drec(1))=pa then “
310 uses RDRUT$, d as DRIC
320 lopen “D”
330 input a “(o15),d,prn$10
340 dclose
350 return
```

We have added the storage and input of the Variable DRIC, and a Loop to store and input the RDRUT\$ Array, if there are any Deleted RECORDs on the File. When we are done, both the INPUT * and PRINT * Loops are stopped.

BASIC 2 HOUSEKEEPING

I have found, while using the BASIC 2 of the Commodore 64, that PRINT * statements sometimes do not work so well writing several

numeric variables to disk separated by the commas. If you find any difficulty in INPUTting the variables in line 100, then the PRINT * statement in Line 220 is most probably at fault. Use separate PRINT * statements for each variable.

```
220 print “I,A,g,p,n$10
221 print “1,I,g,p,n$10
222 print “1,I,g,p,n$10
223 print “1,I,g,p,n$10
```

INPUTting the Variables in line 210 will then work correctly.

Sequential Search METHOD — 1 Read Method

You now have all the routines required to write and read all the RECORDs in the file. Using these routines is merely a matter of practice, and here I am going to suggest another search method which instead of searching for a string within the KeyField will search an entire file for a given string. The process is quite simple. We can break it down to the following:

- OPEN the File INPUT the Search String
- Load the Search to parts of the File
- Open Search Loop
- Read RECORD Search for String
- Match Found more RECORD counter
- End Loop
- Display RECORD numbers found, or RDRUT to Display or Print the RECORDs
- Return to File Menu

If you have followed this route, you will have all the routines needed to accomplish this. The following is for the 1 or 2 RECORD read method. This using the field separated method will be dealt with later.

Let us say that the routine will begin at the line 1000. Of course you can RENUMBER any of the routines as you wish.

```
1000 run*** File Search Routine
1010 m=1 dopen “1,(o15),1,rec,
1100 dclose
1120 prnt “[drec(1)]“ for rec
1140 print “[Field] “,1,1,1,“Value
1150 “Field$10” next
1160 prnt “[char$rec$1] Recid
```

PROGRAMMING

Processing Now -
1990 biography to be given "Home" (1990)
1990 prize "Meister Epos" (1990)
1990 website 1990 File RECORD
Number used

At this point, the window has been closed, or **WINDOWed** if you have a C130 and the clipboard has been **INPUTted**. A message will appear and the current **RECDYED** number being selected is displayed.

You may wish, at this point, to have the RECORD-Block record sorted; as it apparently is entirely up to you. As the read RECORD-block variable, REC# (or RP for Rec#) is moved to decimal, this can take the form of the RECORD-number, here the loop label, P0, or the Serial RECORD-number can be used.

1999 rec. 1950 bridge from Berlin
1950-1951 Number 100

The search results will be the same as those shown by using the sorted RECORD number. The RECORDS needed will be in sorted order, because the result will be based on the date of stopping about the file finding done record RECORD. In the search will be no double entries.

Whichever you choose, the subject is **100% on You!**

1100 genab 4120 nm 4** Read
RECORD
1100 genab4114 genab4120 nm loc
BASIC 2 END

Now, instead of breaking up the DISK38 collected record string, we used to have to go to search the entire RECORDED, and if a match is found, the RECORD# number is stored in the RECD# area, DISKA.

1100 af andre (størrelses) faktorer
med tilhørende forvirring for BASIC

Because both the Array (RES%) and the array will need to be DIM'ed. If you anticipate many EXECUDOs in a file, particularly those BASIC 3.0 ones with comparatively low RAM usage, it may be better not to use an array to store the results, but to place the EXECUDOs scattered, either to prevent, or to the reverse. A separate subroutine would be best here. Another possibility

is to OPEN a separate sequential file and simply PRINT all the RECORDS in it but matched to the file for later reading and displaying, in which case you would have OPENED the sequential records file before the Loop PGM began.

ANSWER: Chapter 10, Section 10.1, Problem 10

and the search box of the system would then be:

1110 of 1998 (Model 5,000). Otherwise, model growth is 3,000 for up to 10 AGHIC-2s.

BASIC 2 users already have their own search string routine which will take the place of PWORD, which can be copied and placed here.

1111 Rara Italiano/Janet5-Long mcGill-1
1112 -diamond/Long mcGill-0,1,2,3,4,5,6
perihelion - Long mcGill-1-Long mcGill-0
Perihelion passes 3 deg geocentric 1029-
1113 -none
1120 -none po
1124 -de lajean grise/Long mcGill-0
1126 -none -none -None -None -None

At the end of the Loop every RECORD on the file will have been searched for the string, and the numbers of the RECORDs matched will either have been entered in RKEY or in a sequential result file. The Machine would then continue like this:

```
1120 print("does search") Break off  
Search for "all"  
1130 m = "Matches Found "  
1140 d[0] = 0 else "Press any key  
to Match."  
1150 Terminate run " Start  
read Loop  
1160 read=eval(p) pos+=4129 read =  
Read RICORD  
1200 if pos>=1000 pos+=129 read  
= Read  
Droping Record  
1210 "Press any Key for  
Next Match" getkeyd  
(256)
```

make some changes to the sequential search routine. Since you do not have a DISKS3 and the RECORDS return from the read routine already divided into the FILEs array DISPS you will have to search the RECORDS within a loop. Make these changes. These are for the sequential disk file method of accessing the records.

SEQUENTIAL SEARCH FIELD
SEPARATOR BASE 16

1100 for a 4800
1110 of course (which is why I didn't mention it)
11 points 3, max per ip for RASOC
11
1116 means
1120 now it is

SEQUENTIAL SEARCH IN FIELD BY SEPARATE HASH

1130 dorn-1a(bn-dupl)(b)-bn(acl)-1
 1143 -dmedH-dmgH(a)je(med)-
 m6Sia-as-bn(dupl)(b)-bn(acl)-
 L-rrrrr-pene + L-pene 1130
 1130 as-1a

SEQUENTIAL LISTING OF RECORDS

Another form of output which you might consider useful is the listing of RECORDs, either to printer, disk or screen. I will detail a sample routine now which you may adapt to suit your particular needs. My own programme uses this sequential listing routine to output the results of searches as well as straightforward lists. However, I shall leave you to accomplish that with your own changes to the following clauses.

1380 stages + 3. (named) [recd] 40-
all good 40-10
1310 10-9 recd*** List Counter set
to 0
1320 print "ListCounter" [recd] 40-
1330 print "Field #1 (Label)" "Subject
Title" 2/4 revise
1330 print "Which Field to List?"
1340 print 34300 nfield=1 rev. ** n0
and next 40-10
1370 print "Another Field to List?" 40-
revise; if y/n? " yes print 1330 revise
** get another field
1380 good 4210 etc *** [List
Review
1390 print "ListCounter" Record
Processing Now
1400 for loop to fix print "Home" ["pos
1410 print "Matches Found" " n
1420 except etc File RECORDS
Number used
1420 [on BASIC II type print 41 10

FIELD-SEPARATED METHOD

If you elected for the IMLD's
separated method of writing and
reading the IELTSR then you must

PROGRAMMING

If you compare the list to be in sorted order, you will need the RECORDs to access the sorted RECORDs array, like this:

1420 record\$[0]put rom ** score in
Sorted Order
1420 [in BASIC 2] record\$[0]

Then the RECORDs are read and put into the field array, DISP\$()

1450 print#10 DISP\$()

and Listed, in this example, to Screen

1440 for n = 1 to 1000 print
record\$[n], next n
1450 Nprint
1460 done
1470 goto 10 [wherever your file starts
begins]

Of course, the above example merely lists your RECORDs to the screen. You would add a request at the beginning of the routine to request the type of output required by the user, and then program the appropriate output, but the output loop remains the same. Note that the line has changed from the ordinary field loop.

FOR A = 1 TO LC PRINT

10

FOR A = 0 TO LC PRINT

DISP\$NEXT A.
Which will display only those fields requested by the user?

Those of you who have used the FIELDS separated method will prefer to use the separate RECORD and FIELDS routine, since your RECORD returns from the READ routine already read into the array DISP\$()

There you have it - all the resources necessary to program your own database files. Now let us look at a layout of a typical relative file program to assist you in the planning of your own.

PROGRAM PLANNING

Exactly which routines you include in your own programs depends much on what you want it to do. If it is a dedicated program, for instance, you will not require the FIELDS position routine, since the FIELDS will always be exactly the same whenever the program is RUN. But let us look at a typical program layout for a variable relative file.

The program would be required to produce any number of different files. Use the routines along the line to include the general variables required before using the read and write routines or there will be unpredictable results. Follow these general rules:

- Always declare the chosen RECORD number before using the

read or write routines. Depending on the part of the program that RECORD-number can be PG, DISP or RN.

- If the RECORD\$ array has been used as the RECORD number declaration then always ensure that it is used when BOTH reading and writing the RECORD.

- When OPENing both relative and sequential files, ALWAYS set the 'optional' DO, US on the Sequential. Although the placement will work well without it, if the drive and device numbers are mixed then only two channels may be used at the same time, instead of three. Only one relative file may be OPENed at the same time.

- Always give the RECORD-number [or PRINT #13, #17 for BASIC 2] twice. This eliminates any chance of a DOS error when accessing the RECORD.

- Use the disk check routine on EVERY drive system.

- DO NOT forget to CLOSE the file when access has finished, or data will be lost. Remember, CLOSE closes ALL open channels, so ensure that all processing has been completed before the DCLOSE command is encountered by the program. BASIC 2, Leave the command channel IS OPEN all the time, but do not forget to CLOSE all files at the end of processing. The best way of ensuring this is that the LAST file channel OPENed should be the FIRST to be CLOSED.

Now here is the Program layout,

FILE LAYOUT — RELATIVE FILES

TITLE SCREEN PROGRAM MENU

Create New	Create Routine	Save	Open File
File		Backup	Menu
Load File	Load	Close File	
	Housekeeping		
Leave	Quit Program		
Program			

FILE MENU

Open RECORDs
Browse RECORDs
Search RECORDs
Print Template

Change KeyFIELD

Save RECORDs
Temporary List
Exit Program

Instrument Counter RN
Display Status
Sequential Search Routine
Print all RECORDs and
LBNs,
and Variables to Printer

Change KeyFIELD

Baseline d00

Save RECORDs Daily
Get FIELDs to List
Save - Housekeeping

Input RECORD Routine
List Record

Print Record Search

Find RECORD, Match

Leave Program

Go to Program Menu

Write RECORD routine
Copy Data Print Search

Find RECORD, Match

Leave Program

Go to Program Menu

Leave Program

Returns to File Menu
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That Was The *commodore* Year That Was

It has been a busy year for Commodore users. Here's a look back at some of the highlights.

here is a point in time during the past year when the Commodore?

January

The new Commodore 64 was well received by the public in August. Models cost \$499.95 and the price was later cut to \$449.95. The machine and its software were a success and the Power House game pack became a hit. The C64 also received a hardware update in October. Changes included a larger 128K RAM chip, a faster 6MHz processor, and a faster floppy disk drive. The new Commodore 64 was released in November.

February

Another surprise from Commodore in the beginning of the year was the release of the first version of Amiga. This was followed by the introduction of the Commodore 16 and the Commodore 116. Both of these machines had 16KB of memory.



Top: early 64 models; above: Newer 16KB models. Right: with top two VCRs. Minnesota Jones and Indiana's "Gold and Bees" worthy of收藏家们。

March

March saw the release of the Commodore 128. It had 128KB of memory, a built-in 3.5-inch floppy disk drive, and a built-in 15-inch monitor. It also had a built-in keyboard and a built-in mouse. The Commodore 128 was a success and became a best-seller.

April

The Commodore 64 was a complete success. It had a built-in keyboard, a built-in monitor, and a built-in floppy disk drive. It also had a built-in mouse. The Commodore 64 was a success and became a best-seller. The Commodore 128 was also a success and became a best-seller.

May

May saw the introduction of the Commodore 16. It had 16KB of memory, a built-in keyboard, and a built-in monitor. It also had a built-in floppy disk drive. The Commodore 16 was a success and became a best-seller. The Commodore 128 was also a success and became a best-seller.



Project Zeta: Engine

Project Zeta: Engine is a game developed by Project Zeta. It is a strategy game where you must build a city and defend it against various enemies.

June

A large number of new games were released in June. Some of the most popular games included "The Legend of Zelda", "The Legend of Dragoon", and "The Legend of Mana". These games were highly praised for their graphics and storylines.

June also saw the release of the Commodore 116. It had 16KB of memory, a built-in keyboard, and a built-in monitor. It also had a built-in floppy disk drive.

July

July saw the introduction of the Commodore 128D. It had 128KB of memory, a built-in keyboard, and a built-in monitor. It also had a built-in floppy disk drive. The Commodore 128D was a success and became a best-seller.



One of the best games, "The Princess of Minoan", was released in July. It is a strategy game where you must build a city and defend it against various enemies. It is considered one of the best Amiga games ever made.

and moving to new heights. Maxis will also change its name to the Big Picture Works.

August

Computer game costs will rise in 1993 from £499.99 to £599.99 to take in the Amstrad PC. US Gold signs a deal with Pepe's and new label, Kixx, gives some of their old titles a second shot at the charts via the budget market.



£499.99

The total round the cost is £2,499 for mid-line titles such as *Empire* and *Mysteries of Egypt* while the best at £19.99 come again this time, *Power*, is *1993: The Power Hour* game maker.

September

September is dominated by the PC Show at Earls Court and is heralded by an assault not in the Heaven Telecomputing dragon. At the centre of the Show is Commodore, who seem well (well, that's what it looks like) where the addition of the Amiga is shown off as an advancing point in the plague set to batter Amiga and C64 manufacturers. The C64 in August will now have a TV module included with it and the C64 is to be bundled in two new packs in Halford's Electronics (£199.99) and comprising a C64 computer, monitor and TV and the same games and the Commodore Home Entertainment Pack (£199.99), that also includes a personal stereo and a Yamaha STX-10 electronic keyboard. Paul S. Smith Manager surprises many including its producer (Graham Gammie) by replacing *Football Manager II* from the top spot.

October

The Commodore game stakes again as Texas Sanderson fails to qualify for



£29.99/£39.99

the gold medal at the Seoul Olympics. The Gold indicates the rise of the Dragons and Dragons games. The Fall of Dragons. Maxis' game division is looking at the competitive version of *Iron Slammer*. It's *Iron Slammer*.

November

Now I must reach for the crystal ball again as distributor and producer's schedules mean that I have to leave before the Commodore 64 is released there, where more major announcements are expected. Well, the C64 is bundled per se? What will it contain, not just *One Thing*? I'm not

surprised. One is set to be a shortage of Amigas.

December

The big game between the Japanese and Dutch 'Operation Wolf' (Acclaim) and the American USA Gold 'Thunderball' competing for the top spot.

As part of the roundup of the year we've selected our top ten products in the C64 providing that have provided the highlights of the year. This is never easy to do, and we've chosen



£29.99/£39.99

Top Ten Games

1. Operation Wolf (Acclaim) - £29.99/£39.99

2. Thunderball (USA Gold) - £29.99/£39.99

3. Iron Slammer (Maxis) - £29.99/£39.99

4. Star Wars: Return of the Jedi (Lucas) - £29.99/£39.99

5. The Last Dragon (Maxis) - £29.99/£39.99

6. Iron Throne (Amiga) - £29.99/£39.99

7. Space Invaders (Amiga) - £29.99/£39.99

8. Star Trek: The Next Generation (Amiga) - £29.99/£39.99

9. Star Trek: Starfleet Commander (Amiga) - £29.99/£39.99

10. Star Trek: Starfleet Commander (C64) - £29.99/£39.99





Approved by Mexican Govt

SPN is an agency that has grown up to this task and has finally taken the lead in developing and implementing major procedures and standards. The late fulfillment of the proposed role of Linton I has introduced some legal problems, and it appears that Hanford and Bechtel will be forced to litigate this issue, and the other contractors will have to follow suit.



Copyright by Prentice-Hall

Replied with the somewhat bitter words of Major General Sir George Grey, as far as they could go without treason. Although he was the most modest and manly man with whom I had the privilege of conversing, and the combining *Lord and Bear* would have made *Lord of Bear* if it were not as Raubert turned to his companion always have given evidence of the importance of his

Consumption is experienced in the moment and relaxation and pleasure, but you don't need courage and motivation to create a sustainable adventure.

[Read more about the Mirrored](#)

We had plenty to choose about in this category, with *Eustachius Arseniculus*, *Pterostylis diffusa* from the Chinese Longshan, while, interestingly, *Habenaria venusta* (Walter Steyermark), *Sarcoglottis* triumphal, with a range of species which includes *Pholidota heterostachys* (Rex) and *Davallia solida* of the Americas.

It was also Dr. B. who introduced Dr. L. R. to me as a friend of education, strong friend with Anti-Slavery. Dr. Macfarren wrote Dr. B. she wrote Miss Weston's Diary which added depth and variety, in the religious strength, power and prayer that Macfarren could show there was no lack of love.



10.1002/anie.201907003

DEFENDER	POSITION	
GOALKEEPER	3	
DEFENDER	1	
MIDFIELDER	8	
ATTACKER	6	
CURRENT SQUAD	4	

Trust Your Manager to Get You Home

Minnesota, certainly changed the state attitude towards Right wingism, with dynamics and the ways before us. Sarah Palin's remark carried on the tradition. Much before the war in the Balkan Interventions, I thought that they may add one dimension to this particular area of concern.

Although a review committee seems to think that any old game can be destroyed as a candidate, we still think that the popular concept of flight was too narrow and dredged that the time had come to move the guidelines and award our accolade to a sportsman with a different view.

Track Your Savings Progress

the progress, the development of the
Guided Missile, land mines, and other
weapons of greater impact of all. It is
natural human instinct to like those
who succeed; but also when things go right
in the last analysis of the Press when
things go wrong, the success of the
mass media falls squarely on the
shoulder of the mass manager as the
paper. In fact, if more people tried
placing *Post-Newsweek* through a certain
real-life manager might be getting a
more sympathetic hearing at the
moment. From the closure design of
The Double comes the most revealing
exemplification of real life that we have
ever seen.



Larcom Ranger Inc. Manufactured



On the 1st of January, 1863, the
Emancipation Proclamation was
issued, which freed all slaves in
the Southern states.

The result was that though
Greece was anxious to co-operate
with us in our venture it did not. We
would have been compelled to turn
the job round this way,
Athenians' After *Bitter* Greece's
opposition to us in Crete. This
decidedly but their late opposition
means that they will have to fight
out with the *Red* countries.

Other games which were considered were Grandslam's brilliant conversion of the David Palau Software's first and second Amiga Successes (Imagin'land, Netherlands) and ImageWorld's "Famicom Fighter" Series for its unusual tongue-in-cheek approach. Many press stated in first because of the originality and variety of the gameplay plus the superb graphics.

Bernard Litt

On July 10th, 1863, the Gold and Cigar Company was incorporated at Orange Works, Md., and it assumed that name. It was a well organized and improved game. The first meeting of the stockholders was held at Orange Works on Aug. 10, 1863, and the officers elected were Dr. Frank P. Hart, President; Mr. George W. Dyer, Vice-President; Mr. John C. Moore, Secretary; and Mr. George W. Dyer, Treasurer. The company had a capital stock of \$100,000, divided into 1,000 shares of \$100 each.

Составлено в 2008 году

Geo-Politik turned the old-Orbis operating system into front page news with the desktop publishing addition that has become so real now, it's hard to conceive, but has a tradition of thousands.



For short sales for which you
prefer the Logos 1295 unit alone,
note the stand with the Price 1295.

— 1 —



Action Replay: Professional Edition

to hand, among the hard goads in your eyes. There were
negotiations between Peeler
and myself at the Expert and
Usher. At last I succeeded
in getting you to understand that
My love was as it seemed
indeed ready to do the much



display all R.A.M.-based systems. Only LSI-11 displays needed to supply the board all the work with the fastest random access memory operating at 1 MHz. These commands used a command language which also contained special disk commands as a feature.

Minibase 128

Need to keep tabs on your stamp collection? Or do you have more serious uses? Minibase may be the answer

By Martin Parker

Minibase is a very simple way of storing anything from a mailing list to an index of your record collection on a C64.

The first thing you will need to do when using it is to create a file. Once you've typed the program in, B1N1 it and you should see a main menu as follows:

- 1 CREATE FILE
- 2 LOAD FILE
- 3 DELETE FILE
- 4 DISPLAY DIRECTORY
- 5 RENAME FILE
- 6 CLEAN UP DISK
- 7 COPY FILE
- 8 VIEW RESIDENT FILE
- 9 ERASE RESIDENT FILE
- A PRINTER OUTPUT ON/OFF

This is largely self-explanatory, but it's worth running through a few items. For a start, Minibase operates within memory – it only uses the disk to load/store the file you are operating on in memory – the resident file.

Creating a file requires you to enter a filename which must be between one and 16 digits long. You can then specify how many records you want in your file, followed by the number of fields you want in each record, which can be anything from one to 10.

Next you must specify a name for each field, which will be the same for

all records. Each field name can be up to 16 characters long.

You can then enter the data record by record. The computer will prompt you with the record number and field name. Data of up to 40 characters long can be entered. Entering a real character ("") will result in a "-" being placed in the field.

Once you've created the file, you can save it to disk.

You can get the file back by using the LOAD FILE option on the menu. Once you've loaded the file, the system gives you a list of file parameters, which consists of the filename, number of records and number of fields per record. Pressing a key will then give you a list of field names.

Finally, pressing another key will give you the sub-menu, which allows you to operate on the file. This includes

- 1 VIEW A RECORD
- 2 PRINT FILE
- 3 SEARCH FOR RECORD
- 4 AMEND FILE
- 5 RETURN TO MAIN MENU

Option 1 requests you to enter the number of a record, which will then be displayed for you. The record will do the same as Option 1, but send the data to the printer.

Searching will ask you to set up a search template, by entering a search record, field by field. You can of course

leave any field blank, if you don't care what goes in it.

Amending a file requests you to enter the record number you wish to change. The record will be displayed for you to change. Following changes, you can save the whole file to disk if you wish.

Going back to the main menu, you can delete a file from disk with option three. The program will double check deletion with you.

Options 4 will show you the disk directory without affecting the memory contents.

Options 5 allows you to edit a new name for any of the files.

The clean-up option, Options 6, will release all the RAM on the disk, which will free space for more files.

The file copy, Options 7, asks you for a filename. It will then be loaded in and can be renamed and saved.

View Resident File simply switches to the file handling sub-menu, which we have already covered.

Erase Resident File clears the current memory contents.

Finally, the last option will dump a list of output to hard copy. This will include file parameters and positive matches.

Getting it in

Minibase is supplied in the form of a BASIC listing. For advice on entering this, refer to our Listings pages.

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The *Your Computer Software Service* makes available all of the programs from each issue on both cassette and disk, as a group of 16 50K disk and 16 60K cassette. Normally the documentation for the programs is supplied with the software itself, it is all available in the relevant magazine should you not have the magazine then basic notes are available from the following address:

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The Disk

Programs on the disk will also be supplied as ready working versions i.e. when possible we will use our Basic Loaders for making up all the programs much easier. Unfortunately at the moment we cannot duplicate C16 and Plus4 programs. However programs for these machines will be available on the disk.

What programs are available?

At the top of each article you will find a box containing the article type, C16 Programs, so that if you can not obtain programs available on a given format, you will also find a sample of symbols after this stage. The symbols have the following meaning:



This symbol means that the program is available on cassette.



These programs are available on disk.

Please Note

Note: the programs supplied on cassette are total working versions of the program we do not put disk-only programs on tape. There is no reason in placing a program that ought to be reading from disk, on to tape.

AUGUST '86

MAKING MUSIC — Programs to accompany Argus's compilation of six major music series (C64)

SHORT INTERLUDE — Overcomes the problems of handling more than one interrupt with this handy routine for machine code programmers (C64)

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SIMPLE — Give your Plus4 the facility to set loans and pull down menus. Available on disk only

SEPTEMBER '86

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OCTOBER '86

SPRITE LIBRARY — In this instalment our sprites take on the look of the alphabet (C64)

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Databases

By Tony Hetherington

Choosing a database is a daunting proposition fraught with its own jargon

The storage and processing of data is what computing is all about, whether it's your company's financial results, a database is a role-playing game or a contact and address file, it's all data in a computer. When your computer is a C64 or C128 with access to tape or, more usually, disk storage media, it becomes a powerful tool that can store, search and retrieve your data.

A database is a custom-designed program to help you organise your data and can be thought of as the data equivalent of a wordprocessor. When creating a database of names using Apple's HyperCard, for example, it is fields can be

you use a wordprocessor, you type in the information you want and then use its facilities to edit and shape it the way you finally want it to appear. In a similar way, you store your data into a database and then use its facilities to shape and sort it in a variety of different ways.

In its simplest form, a database is like a card-file system, storing names and addresses of friends or business contacts. Now, this, is like better than a real card system? For one thing it's more versatile, the details can be changed easily as people move or new ones appear on the scene and, once the information is stored, you can search for specific entries and, through a card manager program, send personalised letters to everyone in your database.

A database can go further than that as you can then select key fields (parts

of your stored data) and use that to decide who should receive a letter or even which one. For example, if your database was used to store the names and addresses of the members of a music library, it could also store the titles the member has borrowed and the dates that they will be back. Thus, together with a card manager program, you could send reminders only to those with overdue debts or bring news of forthcoming concert dates, such as Killer Nano III, to those who have already booked Killer Nano I and II.

In its simplest form, a database is a file which consists of a number of records, each record containing a number of fields and each field a number of characters (See Data really? for an example of the video library, each record would be the entry for each member which would have the following fields:

Record Number, Name, Type, Date, Price, etc.

Suppose this database program and library were application note to the screen is shown:

Record	Name	Type	Date	Price	etc
1	Class 11111	11	1988	100	
2	Class 22222	22	1988	100	
3	Class 33333	33	1988	100	
4	Class 44444	44	1988	100	
5	Class 55555	55	1988	100	
6	Class 66666	66	1988	100	
7	Class 77777	77	1988	100	
8	Class 88888	88	1988	100	
9	Class 99999	99	1988	100	
10	Class 00000	00	1988	100	



Program title	Supplier	Price	Proprietary compatibility	File formats	File record size	Address book inclusion	Printout style	Installation	Comments
Businessware DB	Businessware	£195	PC/Windows	DBF	10 fields	Identified early for Mac	Yes	Yes	The file database is much more user friendly than the others but it would require a monitor or plotter.
File 1000	LogSoft	£199.95	PC/Windows	DBF	10 fields	Not listed	No	No	Excellent value for money. It has very good features but the £199.95 price is a little steep.
Mac Database	Businessware	£149.95	Proprietary	DBF	10 fields	Not listed	No	No	A simple and sensible package that offers features of top special interest and practical.
Macfile	Macfilesoft	£199.95	Proprietary	DBF	10 fields	Not listed	No	No	Very accurate business package and a recommendation.
Macfile Manager	LogSoft	£199.95	None	DBF	10 fields	Identified by disk space	Yes	No	Only one can be used at a time so you cannot have multiple windows running simultaneously.
Outlook	Microsoft	£199.95	Windows	DBF	Not listed	Identified by disk space	No	No	A major market success and deserves a little more respect from the software writers.

Name:

Address:

Date joined club:

Firms currently on file:

Firms that have been listed:

1 - Horror

2 - Adventure

3 - Comedy

4 - Western

5 - Adult

6 - Sci-Fi

Total firms listed:

The fields of a database do not have to just a plain string of characters they can also include calculations such as totals of each type of file held and an overall total so you could quickly interrogate the database to find out who are your best customers.

Similarly, a club secretary could use a database of members to keep track of who owned subscriptions

payments and send them reminders to settle their accounts.

As you can see, a database can be more than just a generic card-index file, because it can put the stored data to work in anything from listed pricing to giving a personal touch to management programs. To get the best out of a database program it would therefore be beneficial with other programs such as a wordprocessor with a mailmerge option, or with a spreadsheet for integrating important figures. One way of ensuring this is to use for an integrated system, such as Mac Office II, or for Logsoft's File 1000, which is part of the 1000 series, which can be built up to form an integrated system of a database, wordprocessor and spreadsheet.

The undoubted leader for the C64 is Superbase from Pinpoint Software. This is arguably the only true C64 database, because it also contains its own programming language through

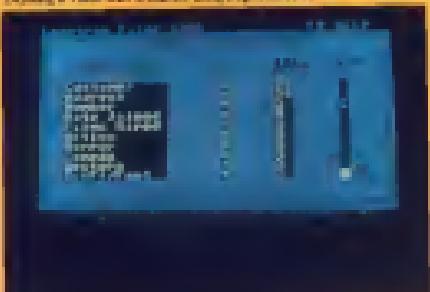
which you can develop your own applications that for example, prompt your user for details of a customer order, and will then display the total price for them, taking into account customer and trade discounts, special offers and VAT.

Choosing which database is right for you can be difficult and confusing task. For money, it will be the price that makes the final decision but you should also consider the the number of fields per record and records in a file that the database supports, as these may limit certain applications.

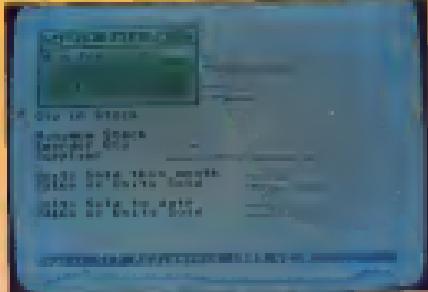
If the database outputs as files in standard ASCII format then the same files can be exchanged with non-Commodore systems, increasing its usefulness.

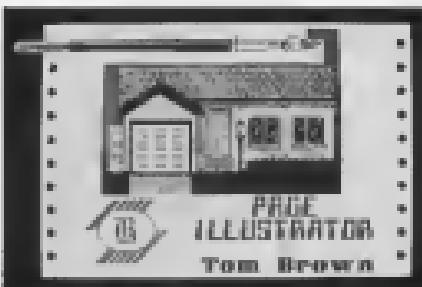
To help you find your way through the jungle, we've compiled a table that highlights some of these important features so that you can choose the right program for you.

Displaying a C64 Mac Database using Logsoft's File 1000



A Mac-like menu driven word processor/database application





Page Illustrator



One problem with the Macintosh-based C128, is that it's always presented as an *artists' engine*. Its graphics capabilities have usually been made fully use of. The high-resolution equivalent to 80-column mode, a respectable 640 x 288 pixels, actually makes that Commodore one marketing high-resolution graphics up to the standard of the BBC 8 in the Amstrad CPC3 (Wow!).

But the casual player - who's the software for? Well, someone's looking at the problem, anyway. Home Illustrator from New Jersey-based Peacock is a combination of an Amiga-type workspace and a drawing package, Home Illustrator.

This sounds like an ambitious entry, since it sounds exactly as though it provides a total operating environment. But no, I have to admit reluctantly at this review, Home Illustrator is an ill-considered piece of software.

The Workbench is all very well, though a little simple. It's really just a way of storing disk files as well as using a pointer. Real Amiga-type working environments are the front end of a machine design philosophy. I've never liked push-on wings systems like GEOS offered the user much. This one is doubly redundant, as it attempts to make a full point on an 8-bit machine.

The entry bit of Home Illustrator is the drawing package. This is crippled by two deadly problems. It is not remotely user-friendly, and it is S-L-O-W. It is obviously written in some sort of sluggish high-level language, so waiting while you move the pointer around the screen can be a painful experience.

After offering a workspace, you would think that the package would offer an wordprocessor part package, but? No chance. Home Illustrator

operates in ten modes: Textedit, lines, boxes, circles, text, shape editor, polygons, copy, selection, and I/O. To access these you have to keep flapping around using, get this not even the function keys, but Control and a numeric. On top of all this, while in a mode, you have to lock up a vast range of keys to use various different functions.

Now I'm not a mouse with everything finite, but one thing I think drawing packages should be is friendly. This one isn't. The saving thing is that the same company has supplied a better drawing package to a friend with their equation base; it is, as all I can say is get that and you won't need Home Illustrator.

By Fin Falvey



Checkmate Programs

The hexadecimal numbers appearing in a column to the left of the listing should not be typed in with the program. These are mostly checkmate values, and are there to help you get past the right. Don't worry if you don't understand the hexadecimal system, as long as you can compare the characters at the screen with the corresponding two characters in the magazine you can use our key decking program.

Type in the Checkmate Program, make sure that you've not made any mistakes and save it to tape or disk

immediately because it will be used with most of the printout and future listings appearing in *Your Commodore*.

At the start of each programming session, load Checkmate and run it. The screen will turn brown with yellow characters and each time you type in a key and press the RETURN key a number will appear on the screen in white. This should be the same as the corresponding value in the magazine.

If the two values don't come up one another, you have not copied the line exactly as printed (probably), and check each character carefully. When you find the error simply correct it and

press RETURN again.

If you want to turn off the checker simply type ST349452 and the screen will return to the familiar blue columns. You can then do whatever it was you wanted to do and if that doesn't use the area where Checkmate lives you can go back to it with the same ST3 command.

No system is foolproof but the chances of two errors cancelling one another are minimal. All the listings are generated in lower case. To turn your computer to lower case mode press the Commodore key and the SHIFT key at the same time.

Mnemonic	Symbol	Keypress	Mnemonic	Symbol	Keypress
[RIGHT]		CTRL & right	[BLACK]		CTRL & 1
[LEFT]		SHIFT & CRSR left	[WHITE]		CTRL & 2
[DOWN]		CRSR up/down	[RED]		CTRL & 3
[UP]		SHIFT & CRSR up/down	[CHAN]		CTRL & 4
[F1]		F1 key	[PURPLE]		CTRL & 5
[F2]		SHIFT & F1 key	[GREEN]		CTRL & 6
[F3]		F3 key	[BLUE]		CTRL & 7
[F4]		SHIFT & F3 key	[YELLOW]		CTRL & 8
[F5]		F5 key	[POUND]		b
[F6]		SHIFT & F5 key	[LARROW]		-
[F7]		F7 key	[RPARROW]		-
[F8]		SHIFT & F7 key	[P1]		SHIFT & †
[HOME]		CLR/HOME	[INST]		SHIFT & INST/DEL
[CLS]		SHIFT & CLR/HOME	[REV T]		RE REV
[ISON]		CTRL & 9	[Clear]		CBM + letter
[SYSCOFF]		CTRL & D	[Mirror]		SHIFT + letter

YOUR

COMMODORE

Listings

Despro**PROGRAM LISTINGS**

NOTE: This program is for operation only.



```

10 REM OUT OF COMPUTER & COMPUTER
20 REM LOADS DATA FROM A DATAFILE
30 REM & PRINTS IT TO THE SCREEN
40 REM 10 FOR LOAD A FILE NAMED &
50 REM PRINTER.CDT, WHICH IS LOCATED IN THE
60 REM PRINTER.DAT DIRECTORY
70 REM
80 REM FOR LOAD THE DATA INTO THE
90 REM
100 REM
110 REM
120 REM
130 REM
140 REM
150 REM
160 REM
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840 REM
850 REM
860 REM
870 REM
880 REM
890 REM
900 REM
910 REM
920 REM
930 REM
940 REM
950 REM
960 REM
970 REM
980 REM
990 REM

```

```

1000 REM 10 PRINT "DATA IS BEING LOADED FROM THE FILE"
1010 REM 20 DATA CDT, WHICH IS LOCATED IN THE
1020 REM 30 PRINTER.DAT DIRECTORY
1030 REM 40 FOR LOAD THE DATA INTO THE
1040 REM 50 PRINTER.CDT, WHICH IS LOCATED IN THE
1050 REM 60 PRINTER.DAT DIRECTORY
1060 REM 70 FOR PRINT THE DATA TO THE SCREEN
1070 REM 80 FOR PRINT THE DATA TO THE SCREEN
1080 REM 90 FOR PRINT THE DATA TO THE SCREEN
1090 REM 100 FOR PRINT THE DATA TO THE SCREEN
1100 REM 110 FOR PRINT THE DATA TO THE SCREEN
1110 REM 120 FOR PRINT THE DATA TO THE SCREEN
1120 REM 130 FOR PRINT THE DATA TO THE SCREEN
1130 REM 140 FOR PRINT THE DATA TO THE SCREEN
1140 REM 150 FOR PRINT THE DATA TO THE SCREEN
1150 REM 160 FOR PRINT THE DATA TO THE SCREEN
1160 REM 170 FOR PRINT THE DATA TO THE SCREEN
1170 REM 180 FOR PRINT THE DATA TO THE SCREEN
1180 REM 190 FOR PRINT THE DATA TO THE SCREEN
1190 REM 200 FOR PRINT THE DATA TO THE SCREEN
1200 REM 210 FOR PRINT THE DATA TO THE SCREEN
1210 REM 220 FOR PRINT THE DATA TO THE SCREEN
1220 REM 230 FOR PRINT THE DATA TO THE SCREEN
1230 REM 240 FOR PRINT THE DATA TO THE SCREEN
1240 REM 250 FOR PRINT THE DATA TO THE SCREEN
1250 REM 260 FOR PRINT THE DATA TO THE SCREEN
1260 REM 270 FOR PRINT THE DATA TO THE SCREEN
1270 REM 280 FOR PRINT THE DATA TO THE SCREEN
1280 REM 290 FOR PRINT THE DATA TO THE SCREEN
1290 REM 300 FOR PRINT THE DATA TO THE SCREEN
1300 REM 310 FOR PRINT THE DATA TO THE SCREEN
1310 REM 320 FOR PRINT THE DATA TO THE SCREEN
1320 REM 330 FOR PRINT THE DATA TO THE SCREEN
1330 REM 340 FOR PRINT THE DATA TO THE SCREEN
1340 REM 350 FOR PRINT THE DATA TO THE SCREEN
1350 REM 360 FOR PRINT THE DATA TO THE SCREEN
1360 REM 370 FOR PRINT THE DATA TO THE SCREEN
1370 REM 380 FOR PRINT THE DATA TO THE SCREEN
1380 REM 390 FOR PRINT THE DATA TO THE SCREEN
1390 REM 400 FOR PRINT THE DATA TO THE SCREEN
1400 REM 410 FOR PRINT THE DATA TO THE SCREEN
1410 REM 420 FOR PRINT THE DATA TO THE SCREEN
1420 REM 430 FOR PRINT THE DATA TO THE SCREEN
1430 REM 440 FOR PRINT THE DATA TO THE SCREEN
1440 REM 450 FOR PRINT THE DATA TO THE SCREEN
1450 REM 460 FOR PRINT THE DATA TO THE SCREEN
1460 REM 470 FOR PRINT THE DATA TO THE SCREEN
1470 REM 480 FOR PRINT THE DATA TO THE SCREEN
1480 REM 490 FOR PRINT THE DATA TO THE SCREEN
1490 REM 500 FOR PRINT THE DATA TO THE SCREEN
1500 REM 510 FOR PRINT THE DATA TO THE SCREEN
1510 REM 520 FOR PRINT THE DATA TO THE SCREEN
1520 REM 530 FOR PRINT THE DATA TO THE SCREEN
1530 REM 540 FOR PRINT THE DATA TO THE SCREEN
1540 REM 550 FOR PRINT THE DATA TO THE SCREEN
1550 REM 560 FOR PRINT THE DATA TO THE SCREEN
1560 REM 570 FOR PRINT THE DATA TO THE SCREEN
1570 REM 580 FOR PRINT THE DATA TO THE SCREEN
1580 REM 590 FOR PRINT THE DATA TO THE SCREEN
1590 REM 600 FOR PRINT THE DATA TO THE SCREEN
1600 REM 610 FOR PRINT THE DATA TO THE SCREEN
1610 REM 620 FOR PRINT THE DATA TO THE SCREEN
1620 REM 630 FOR PRINT THE DATA TO THE SCREEN
1630 REM 640 FOR PRINT THE DATA TO THE SCREEN
1640 REM 650 FOR PRINT THE DATA TO THE SCREEN
1650 REM 660 FOR PRINT THE DATA TO THE SCREEN
1660 REM 670 FOR PRINT THE DATA TO THE SCREEN
1670 REM 680 FOR PRINT THE DATA TO THE SCREEN
1680 REM 690 FOR PRINT THE DATA TO THE SCREEN
1690 REM 700 FOR PRINT THE DATA TO THE SCREEN
1700 REM 710 FOR PRINT THE DATA TO THE SCREEN
1710 REM 720 FOR PRINT THE DATA TO THE SCREEN
1720 REM 730 FOR PRINT THE DATA TO THE SCREEN
1730 REM 740 FOR PRINT THE DATA TO THE SCREEN
1740 REM 750 FOR PRINT THE DATA TO THE SCREEN
1750 REM 760 FOR PRINT THE DATA TO THE SCREEN
1760 REM 770 FOR PRINT THE DATA TO THE SCREEN
1770 REM 780 FOR PRINT THE DATA TO THE SCREEN
1780 REM 790 FOR PRINT THE DATA TO THE SCREEN
1790 REM 800 FOR PRINT THE DATA TO THE SCREEN
1800 REM 810 FOR PRINT THE DATA TO THE SCREEN
1810 REM 820 FOR PRINT THE DATA TO THE SCREEN
1820 REM 830 FOR PRINT THE DATA TO THE SCREEN
1830 REM 840 FOR PRINT THE DATA TO THE SCREEN
1840 REM 850 FOR PRINT THE DATA TO THE SCREEN
1850 REM 860 FOR PRINT THE DATA TO THE SCREEN
1860 REM 870 FOR PRINT THE DATA TO THE SCREEN
1870 REM 880 FOR PRINT THE DATA TO THE SCREEN
1880 REM 890 FOR PRINT THE DATA TO THE SCREEN
1890 REM 900 FOR PRINT THE DATA TO THE SCREEN
1900 REM 910 FOR PRINT THE DATA TO THE SCREEN
1910 REM 920 FOR PRINT THE DATA TO THE SCREEN
1920 REM 930 FOR PRINT THE DATA TO THE SCREEN
1930 REM 940 FOR PRINT THE DATA TO THE SCREEN
1940 REM 950 FOR PRINT THE DATA TO THE SCREEN
1950 REM 960 FOR PRINT THE DATA TO THE SCREEN
1960 REM 970 FOR PRINT THE DATA TO THE SCREEN
1970 REM 980 FOR PRINT THE DATA TO THE SCREEN
1980 REM 990 FOR PRINT THE DATA TO THE SCREEN

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LISTINGS

LJETIĆ NOŠA

UHG Comparison

PRIMERAS VERSIÓN



- 20 1 PRINT [CHARACTER] 1 TO
INTERVAL, POSITION, N
 - 20 2 PRINT [COL] [WHITE] [BLKTY] OR
[CHAR] [CHARACTER] NOT COMPRESS
ONE
 - 20 3 PRINT [CHAR] [COL] AND [WHITE]
OR [BLKTY] [CHAR] [BLKTY] [COL]
 - 20 4 PRINT FREE LINE BY [BLKTY] OR
[CHAR] [POSITION], ONE

LISTINGS

Wolfram Test

PRINTER DATE



LISTINGS

LISTINGS

LISTINGS

LISTINGS

LISTINGS

Franklin Street

Digitized by srujanika@gmail.com



BRUNNEN VERLAG FRANKFURT AM MAIN
SCHRIFTLETTERTYPUS VON ERNST LUDWIG KIRCHNER

中華人民共和國
地圖出版社

When you start this program it will ask for the database name, table name and then give you a list of other options to carry on.

■ 1998年1月1日施行の新規制

200 00 зона в кото рои зоне зоне з
00 зона в кото рои зоне зоне з

2000-2001
2001-2002
2002-2003

100 1000 1000
100 1000 1000 1000 1000 1000
100 1000 1000 1000 1000 1000

	DATA	100	120	150	180	200
100	DATA	100	120	150	180	200
120	DATA	120	140	170	200	220
150	DATA	150	180	210	240	270
180	DATA	180	210	240	270	300
200	DATA	200	240	280	320	360

100 4 100 1000
100 1000 1000 1000 1000 1000 1000
100 1000 1000 1000 1000 1000 1000
100 1000 1000

10. The following table shows the number of hours worked by 1000 workers in a certain industry.

100. *Scutellaria* *baicalensis* *Georgi* *var.* *baicalensis*

300 290 280 270 160 150 140

LITERATURE

LISTINGS

REFERENCES

LATINOS

1996 DATA 10 217 200 8-1 179
10 10000
1996 DATA 100 200 100 200 100
10 10 1179
1996 DATA 100 100 100 100 100 100
10 100

200

Figure 10.10



LISTINGS

LISTINGS

MAIL ORDER ADVERTISING

British Code of Advertising Practice

Advertisements in this publication are required to conform to the British Code of Advertising Practice. In short, it says that advertisements which claim to be factual must be true and receive information in full and clear terms. If the offer relates to a long delivery service or service, there must be a long delivery period or postage information on how long it may take.

Mail Order Protection Scheme

If you make a complaint about goods or services in this magazine and they are still in existence at delivery, Anglo-Britannic Publications Ltd will refer your correspondence to their Adjudicator who provides a free and confidential service.

- (1) You have not received the goods or had your money refunded and:
- (2) You write to the Publishers of this publication, communicating the problem and giving the name, address and telephone number of the seller and a letter from your supplier from the day you made your complaint.

Please do not wait until you have received the goods you were sent and wait for a refund before you complain and wait for a refund of payment if required.

This protection scheme applies to goods and services bought through the Publishers' advertisements or printed after the Adjudicator has received your complaint. Complaints can be made to a limit of £1000 per person for one or more deliveries or off-lease hire up to £10,000 per person in respect of all other consumer purchases. Claims may be made for legal expenses or when the above procedure has not been complied with. All the relevant details of the scheme are contained in the booklet "How to Complain About Goods and Services" available to obtain free of charge from the Adjudicator, 200 Newgate Street, London EC1R 1EN.

This scheme does not apply to advertisements in those respects in which advertisements in this magazine may be exempted, namely those in respect of competitions etc., provided in a spirit of giving away such advertisements. Classified advertisements are excluded.

It's easy to complain about advertisements. But which ones?

Every week millions of advertisements appear in print on posters or in the cinema.

Most of them comply with the rules contained in the British Code of Advertising Practice.

But some of them break the rules and threaten your compliance.

If you're not sure about which ones they are, however drop us a line and we'll send you an abridged copy of the Advertising Code.

Then if an advertisement bothers you, you'll be justified in bothering us.

The Advertising Standards Authority
If an advertisement is wrong, we'll have to put it right.
ASA Ltd Dept 2 Brook House, Tavistock Place, London WC1B 3RN

This space is dedicated to the interests of high standards of advertising.

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Unargin: \$10 per word,
(excluding VAT)

Format display: £10.00 plus VAT per single column
continuous minimum 2cm. Ring for information on
series length/lead/line-ups.

All advertisements in this section must be written.
All advertisements are accepted subject to the permanent conditions
set out on the advertisement rate card (available on request).

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Riverside
B12 8AB
Computer Components
Tel: (01524) 811111
COMMERCIAL COMPUTER
EDUCATIONAL SYSTEMS
PERSONAL COMPUTER

MUSIC

A PRO PERFORMER FOR TIME 64/T200

Digitally recording studio for
mid-instrumentalists &
recorders. £1495.

8800 MUSIC INTERFACE
One integrated package with
full MIDI & Tone Sync.

ONLY £19.95 inc. VAT
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PROGRAMMER

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UK's leading software
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VAT**
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0800 3333333

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Brentwood, Essex, CM11 4EP**

01-437 0699

Send your requirements to:
ALAN COLE
CLASSIFIED DEPARTMENT
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LONDON W1R 3AB.



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Basic

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Dazpro △ Minibase △ UD